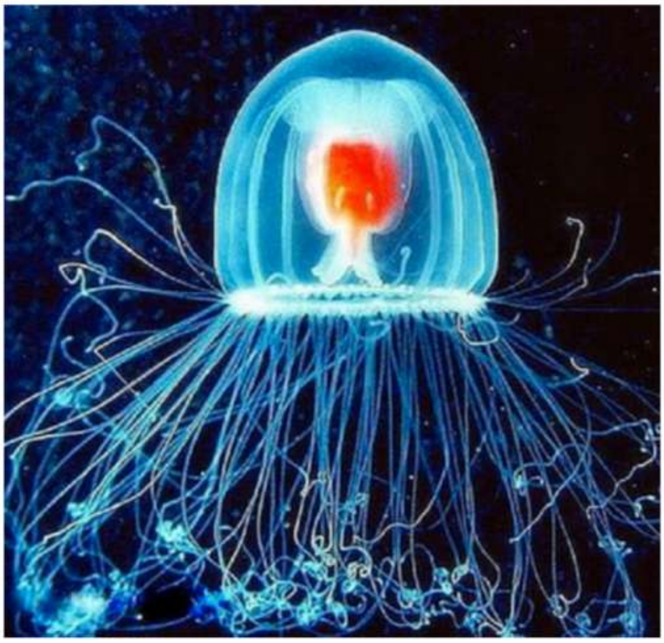
4

The **immortal jellyfish** (*Turritopsis dohrnii*) is capable of biological immortality.



It's one of few known species capable of reverting completely to a sexually immature, colonial polyp stage after having reached sexual maturity as a solitary (free-floating) individual (called a medusa).

> Theoretically, this process can go on indefinitely, effectively rendering the jellyfish biologically immortal

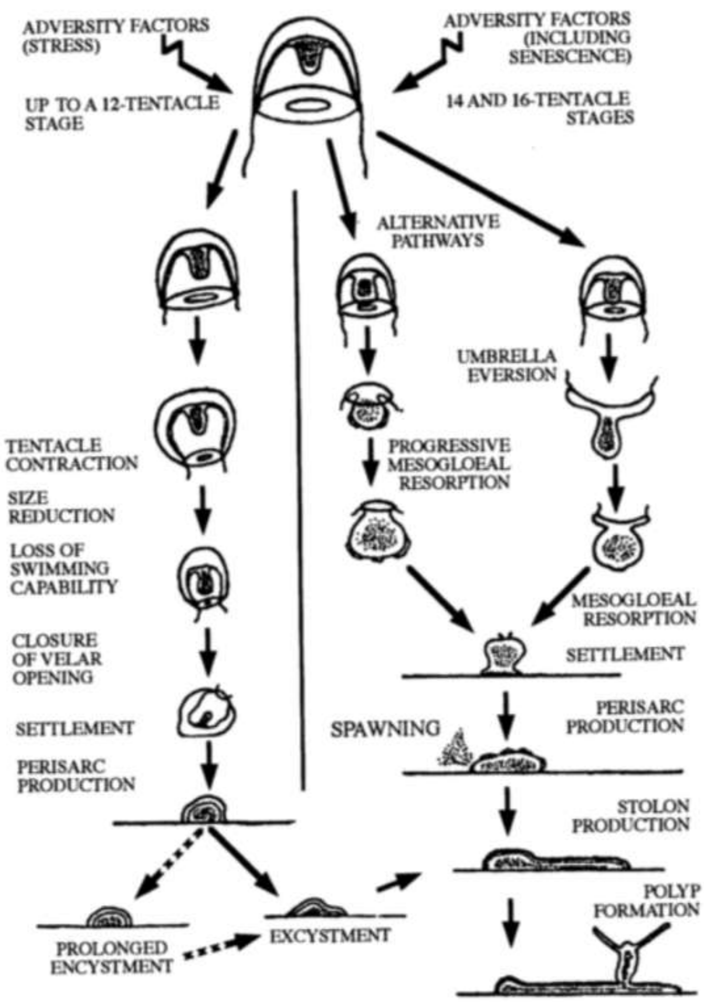
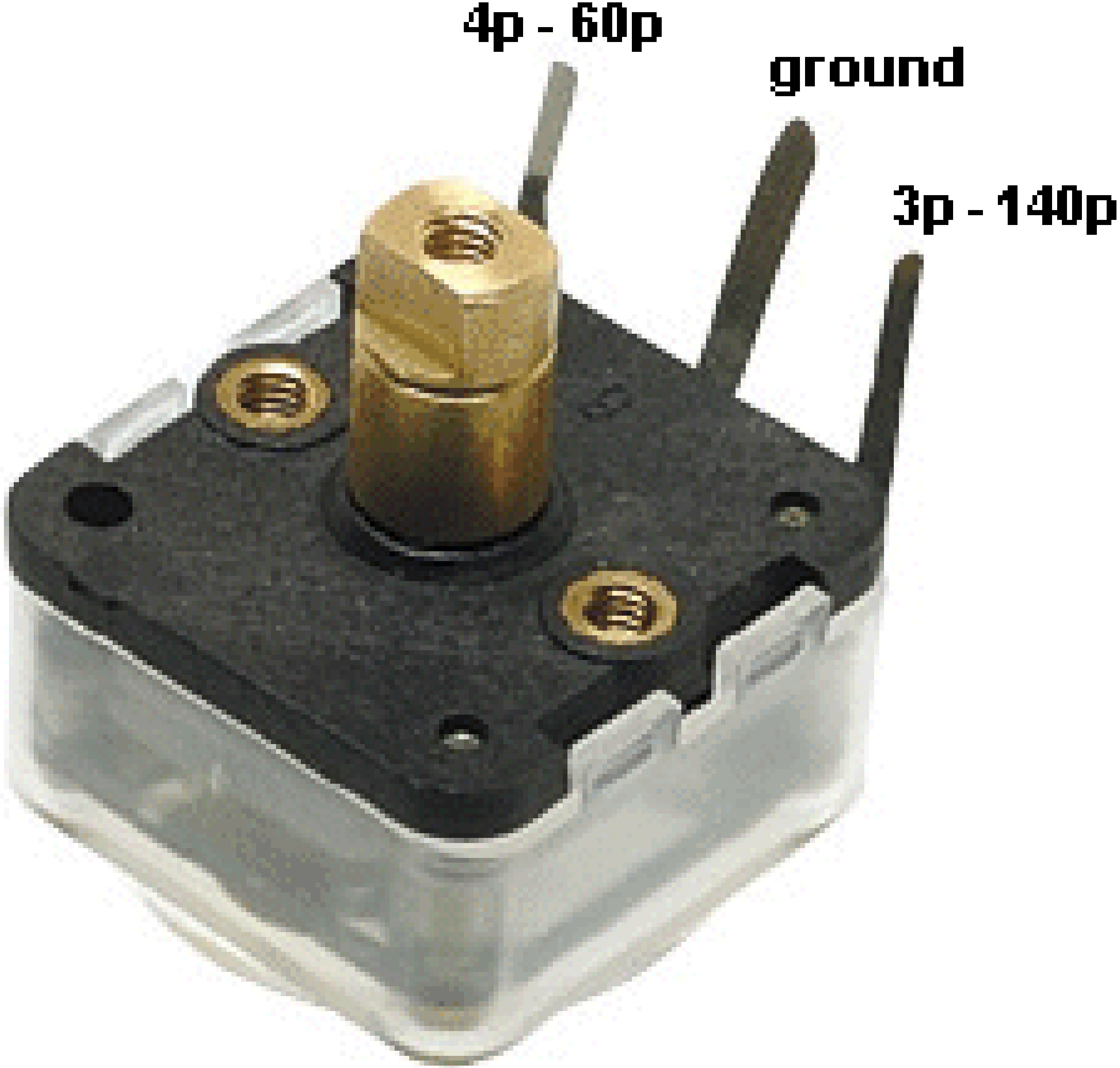
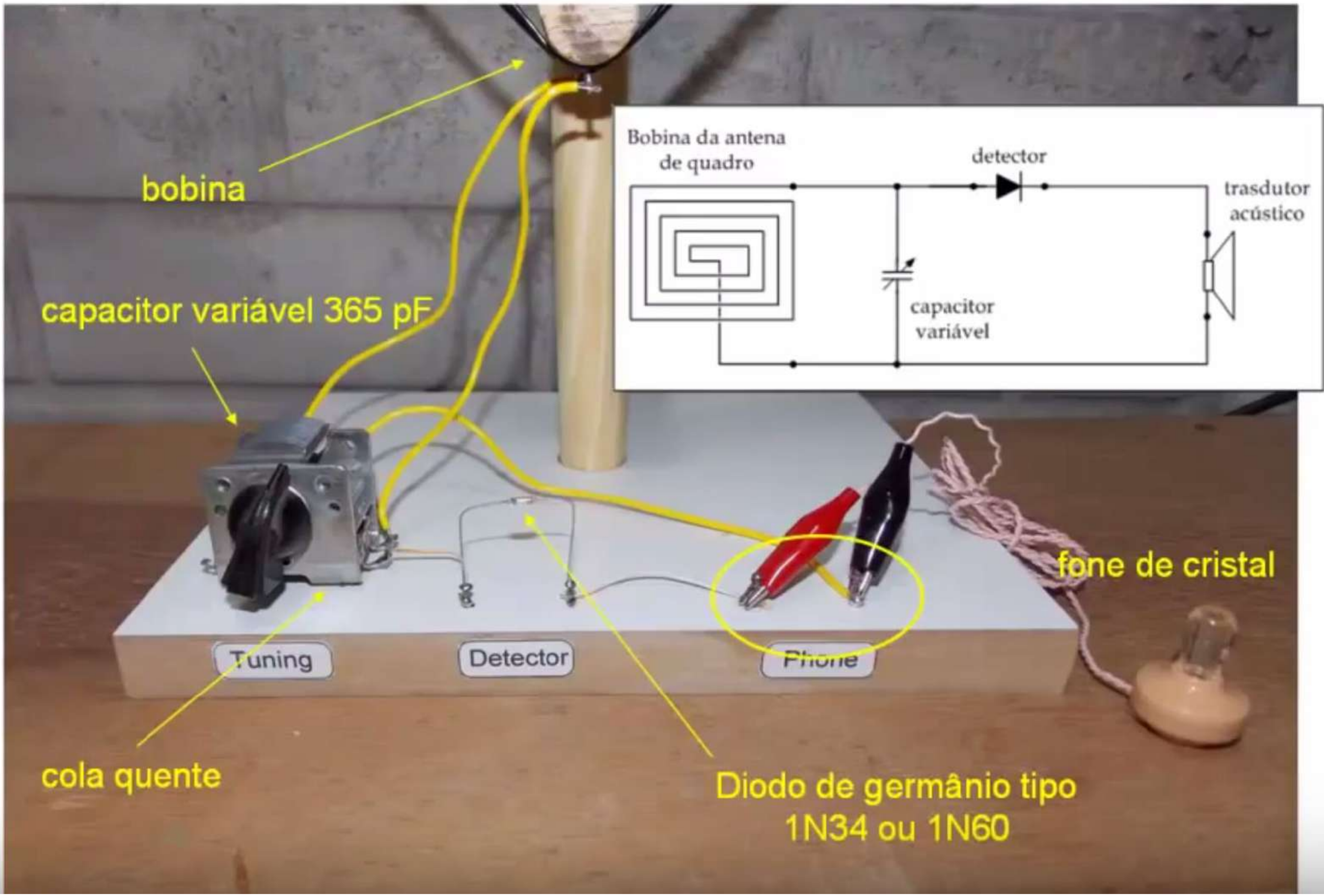


Figure 3. Pathways of transformation from medusa into polyp. Fate of stressed medusae up to 12-tentacle stage (left side), and alternative transformations of stressed or spawning medusae from a 14-tentacle or 16-tentacle stage (right side). The final product is always the polyp colony (bottom), directly or through a resting stage.


4p - 60p
ground
3p - 140p

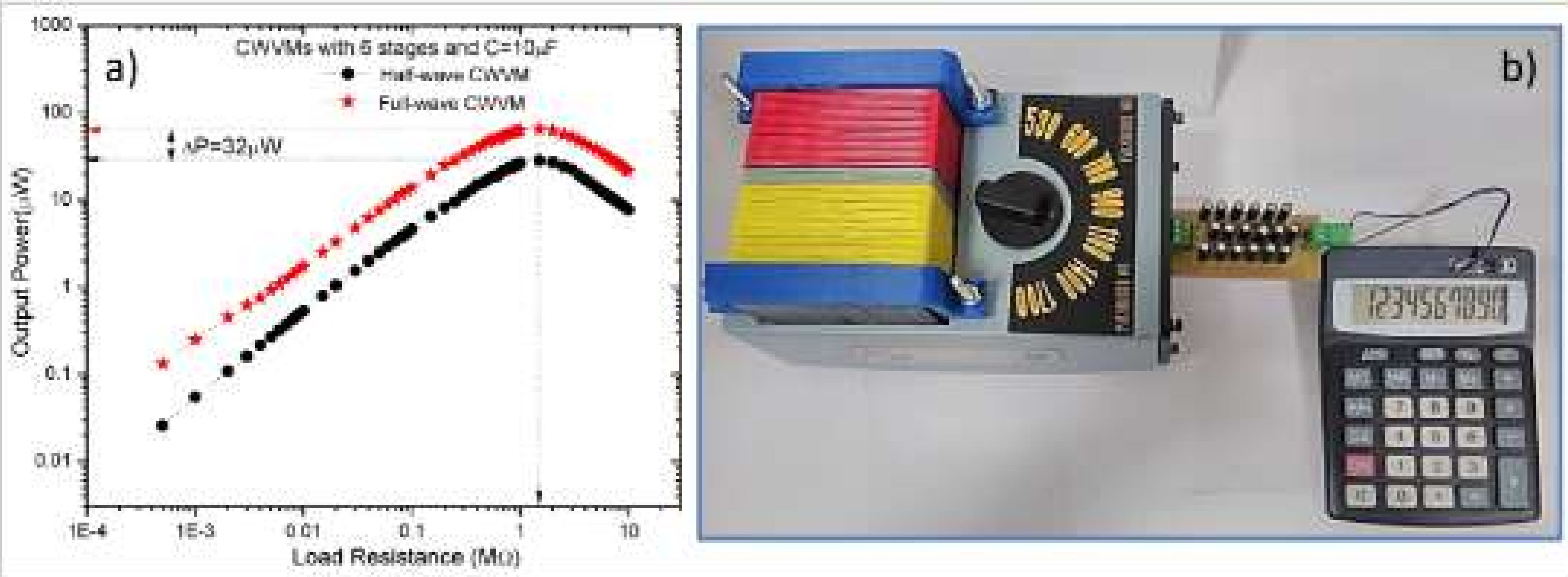
© www.petervis.com
© Copyright Protec


eisco
Germanium Diode
A
K
1N60
Max. 50 V
CE



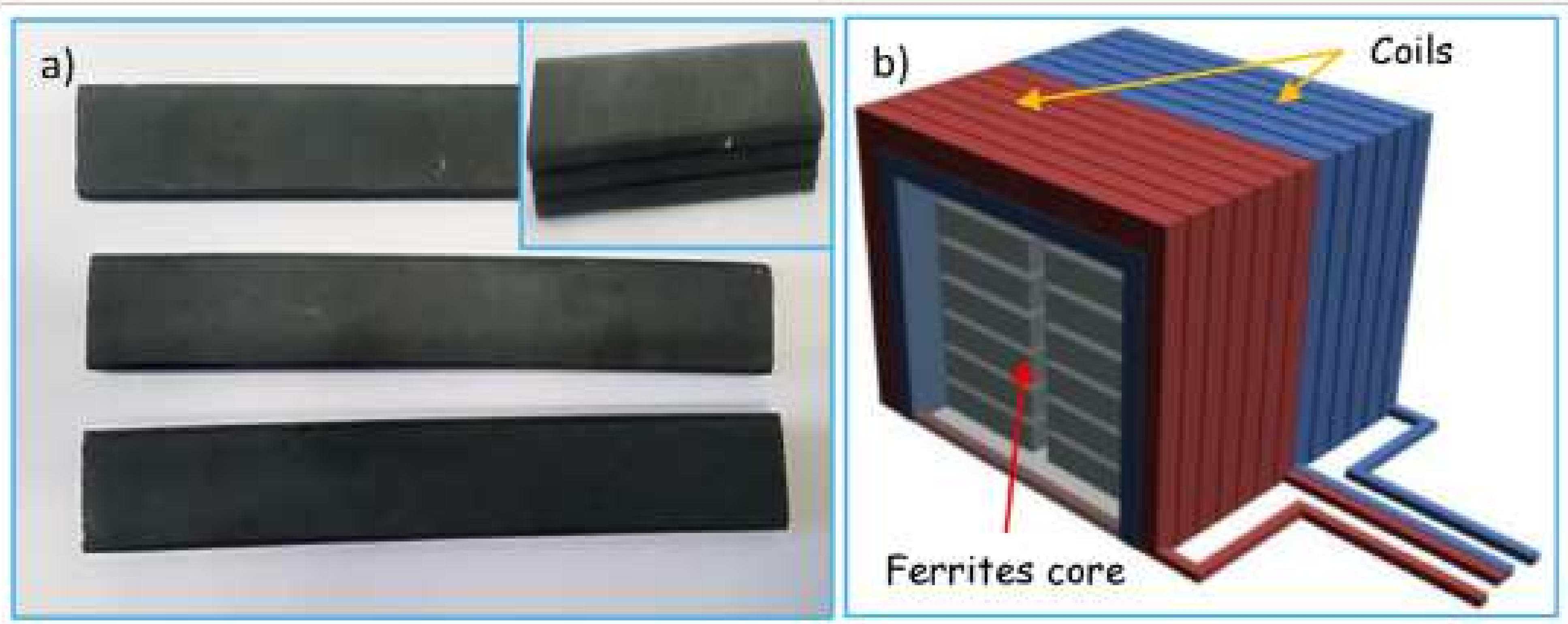
bobina
capacitor variável 365 pF
cola quente
Diodo de germânio tipo
1N34 ou 1N60
fone de cristal
Tuning
Detector
Phone
Bobina da antena
de quadro
detector
trasdutor
acústico
capacitor
variável

Figure 12. (**a**) Output power for a half-wave and full-wave CWVM, and (**b**) portable electronic calculator running with the AM energy harvester. Detected input signal in LC resonator is 1.5 V at 1 MHz.



×

Figure 4. (a) Ferrite cores used for antenna coil, inset shows the stacked cores, and (b) scheme of the composed ferrite core.



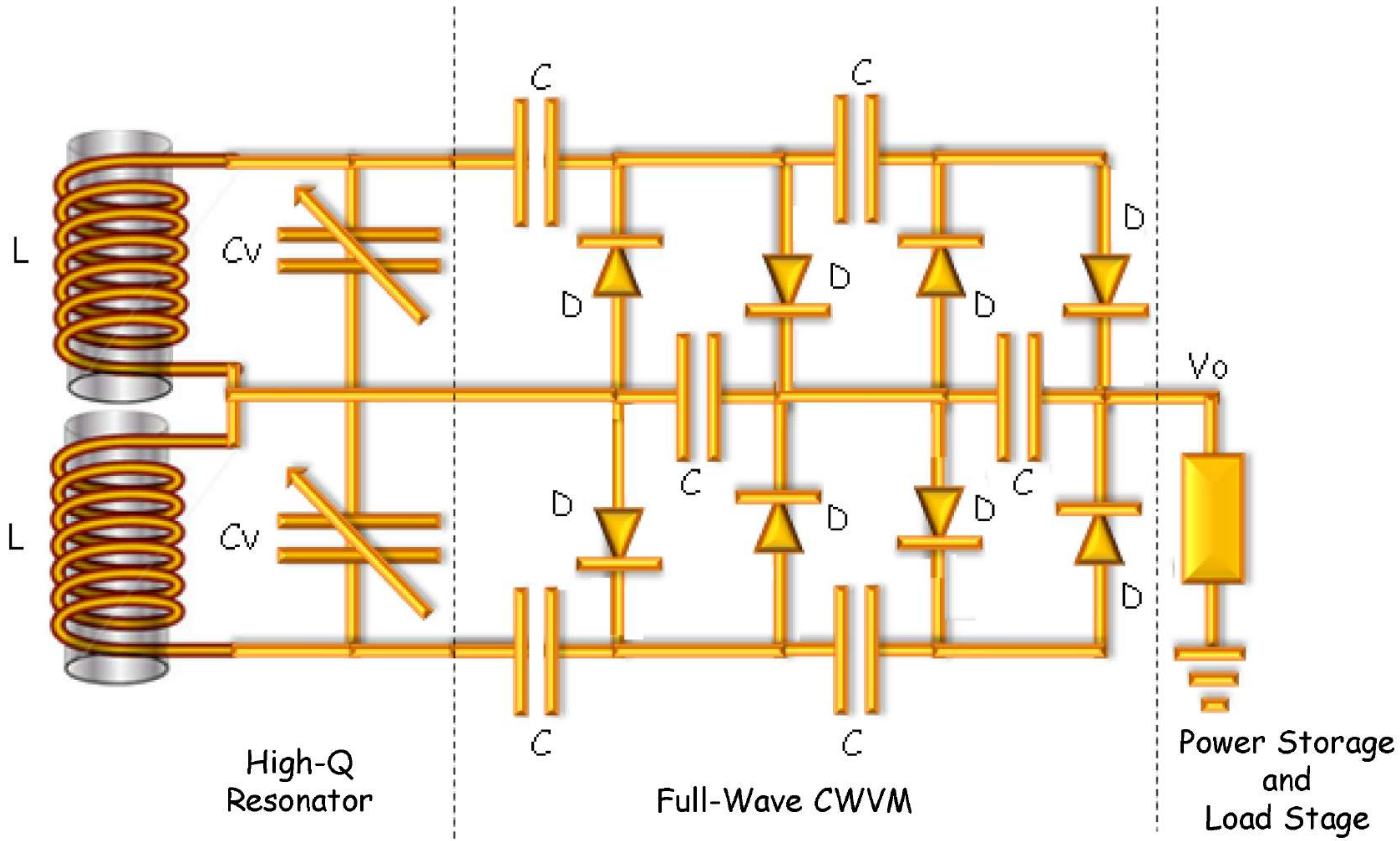

L
Cv
C
D
Vo
L
Cv
C
D
High-Q
Resonator
Full-Wave CWVM
Power Storage
and
Load Stage

Figure 5. (a) circuit for a six-stage conventional CWVM, and (b) circuit for a six-stage full wave-CWVM. Here, Cs stands for the series capacitances.

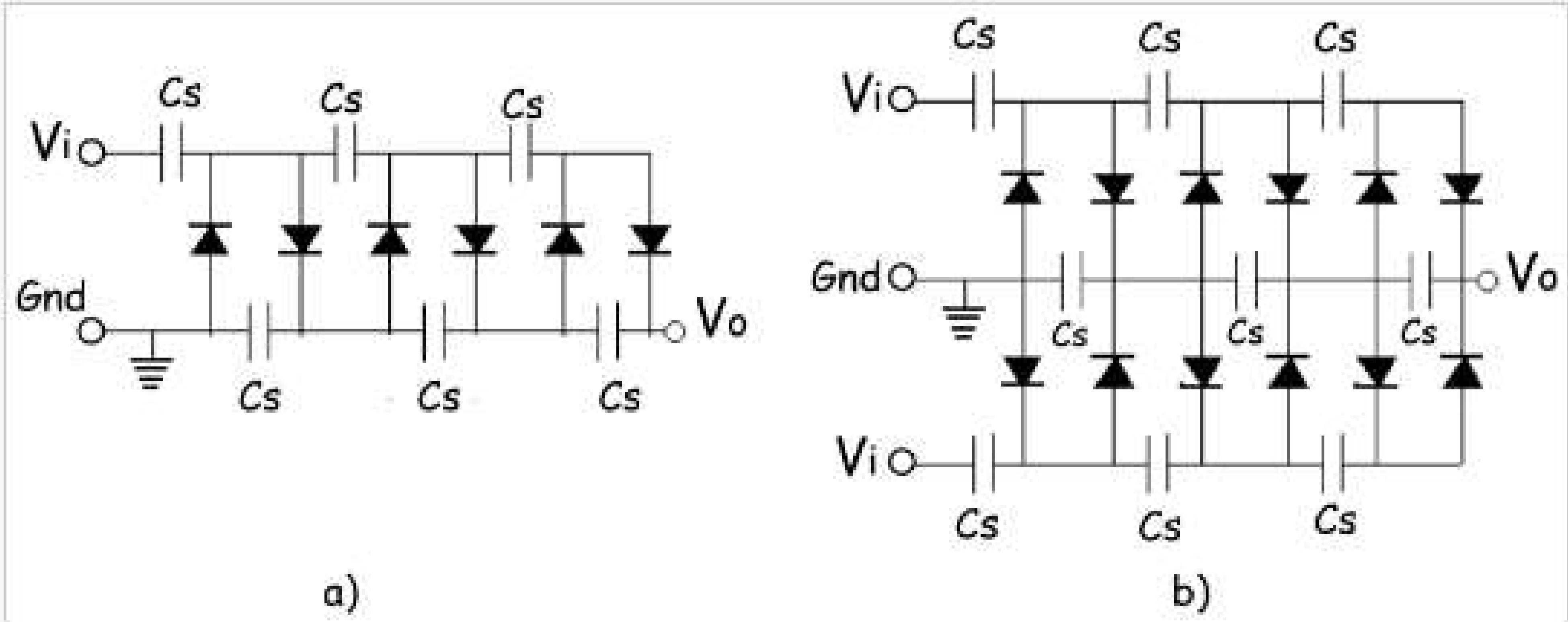


Figure 6. Pictorial image of the AM-RF energy harvesting system.

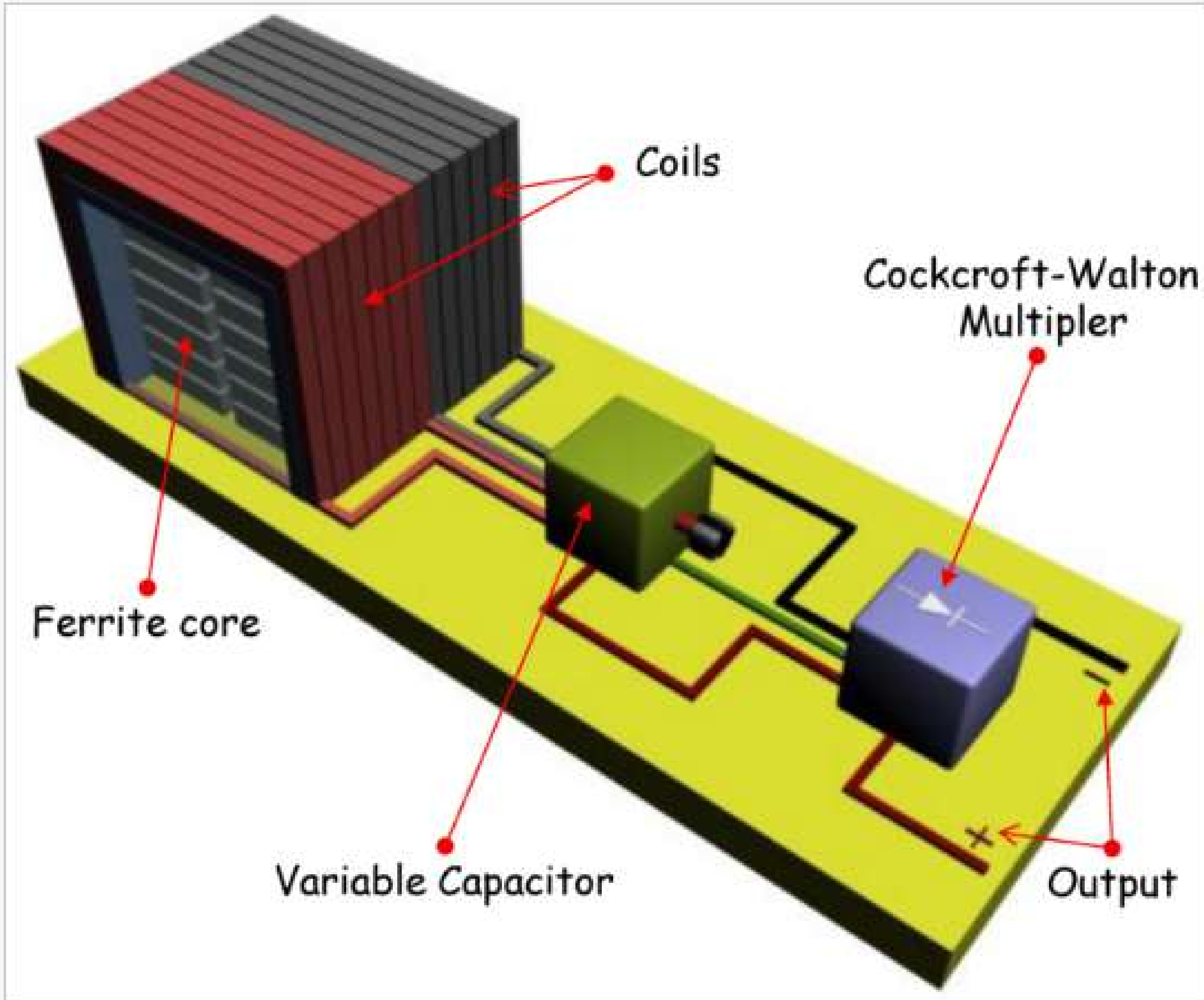
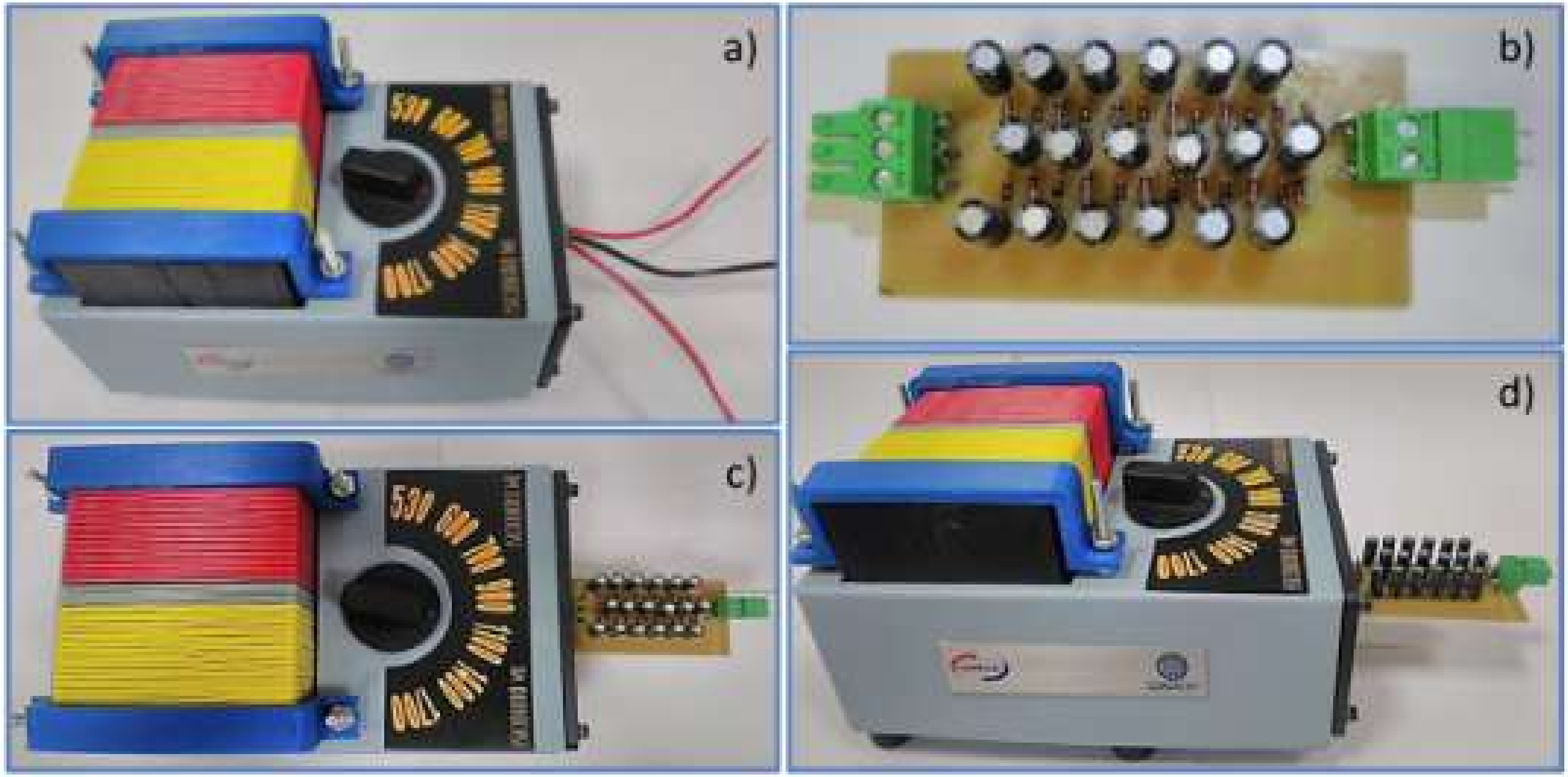
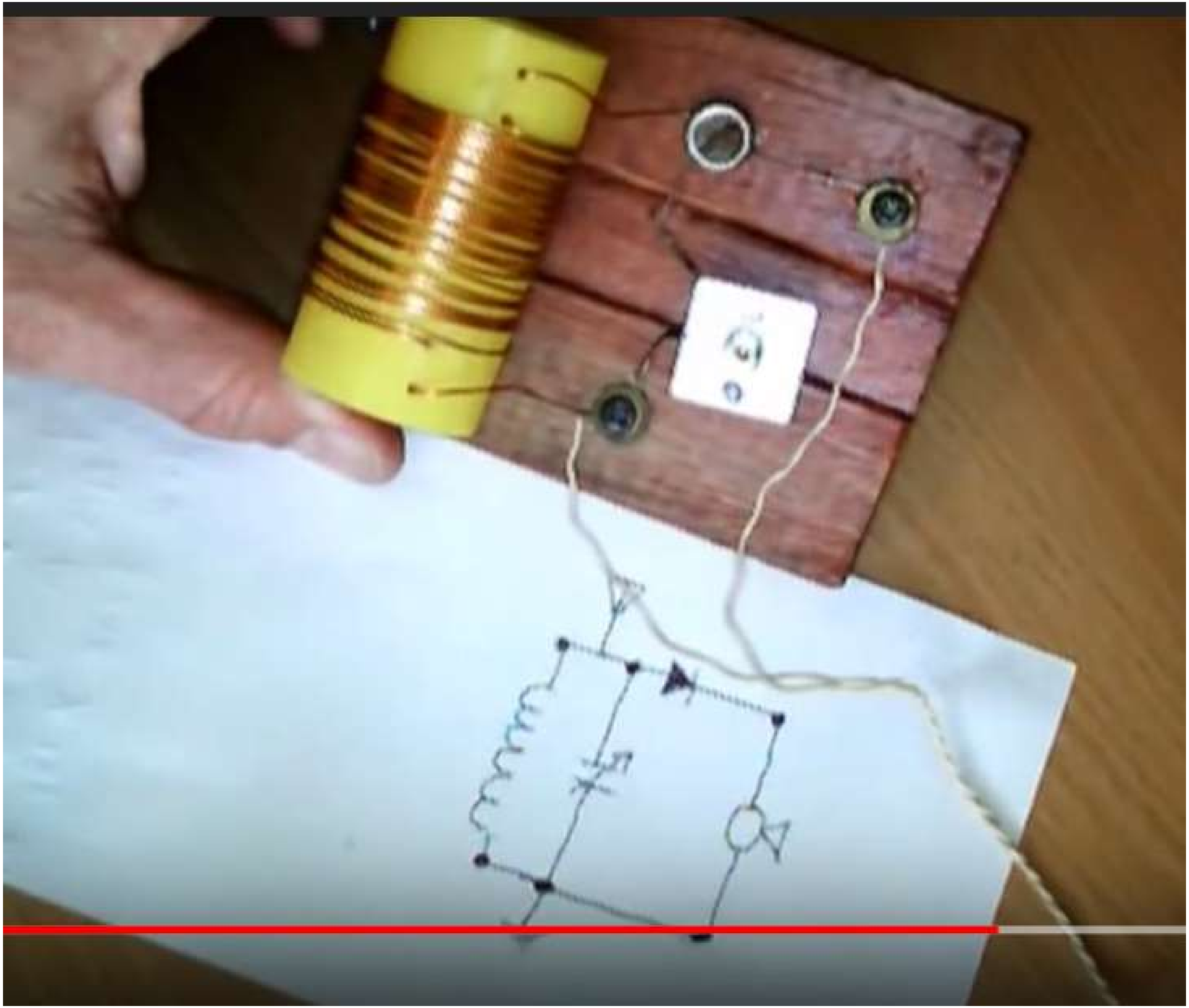
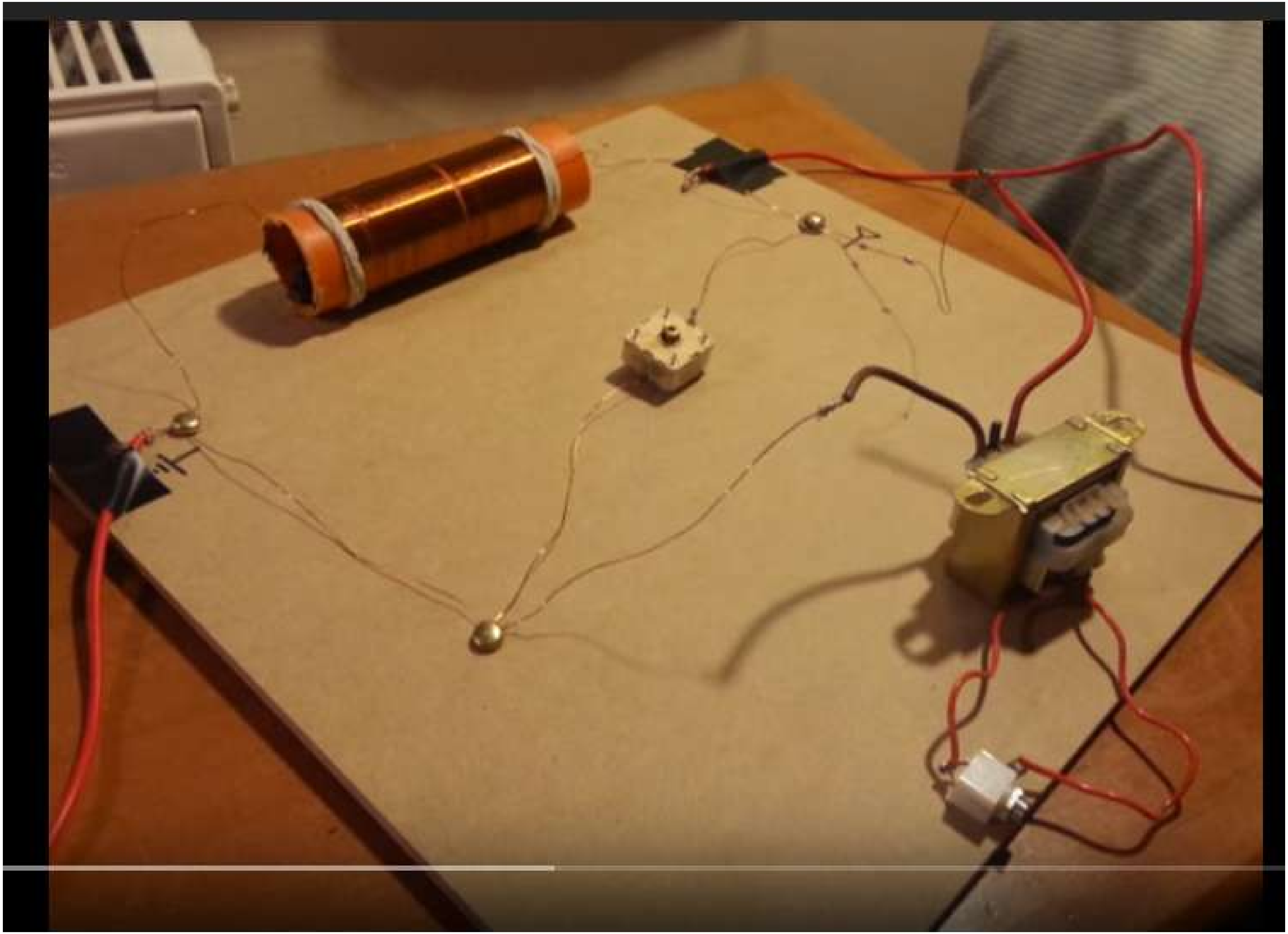
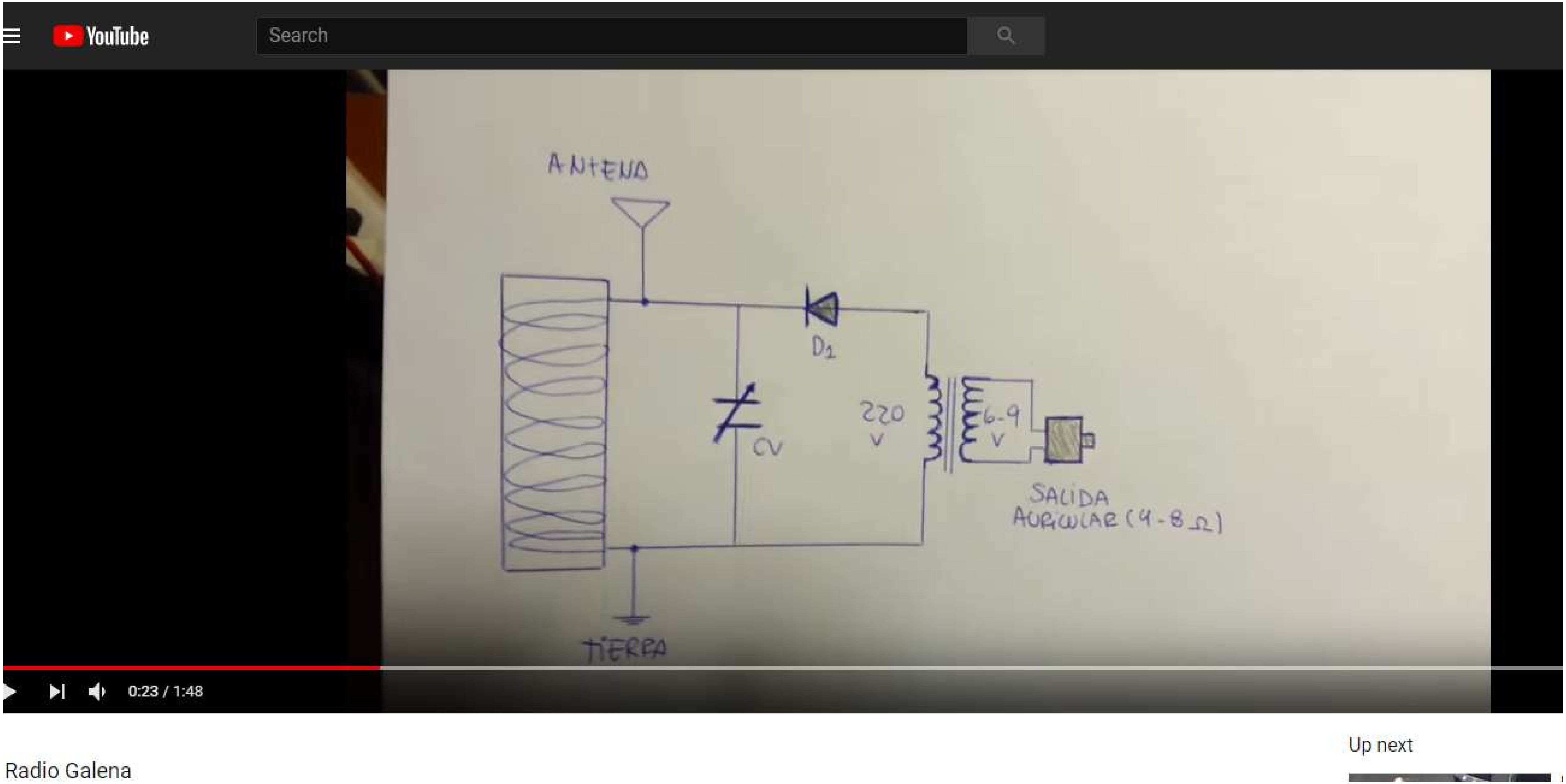


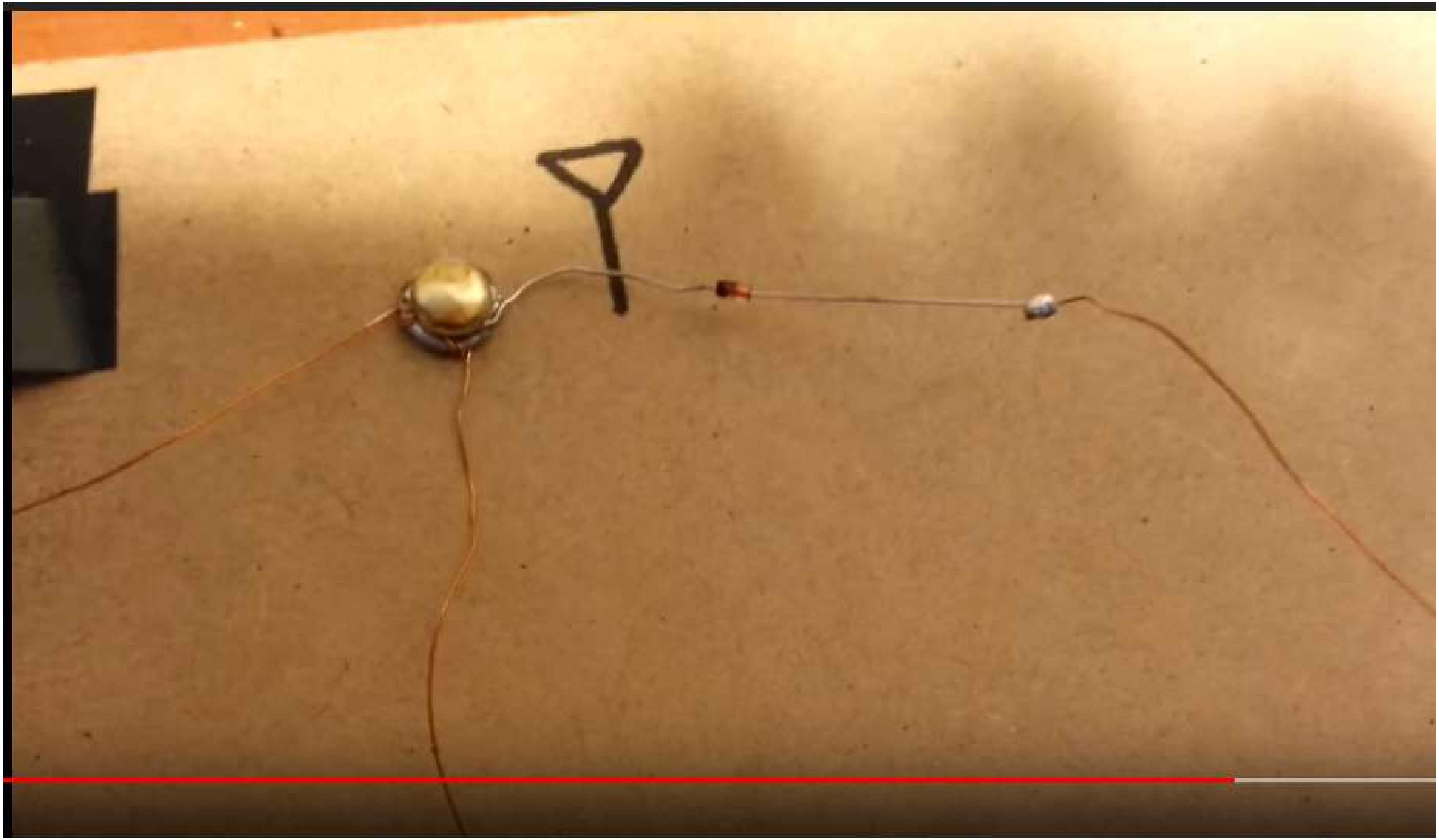
Figure 11. (a) AM resonator implemented, (b) Full-wave CWVM implemented, (c) top view of the AM resonator and full-wave CWVM, and (d) lateral view of the AM resonator and full-wave CWVM.

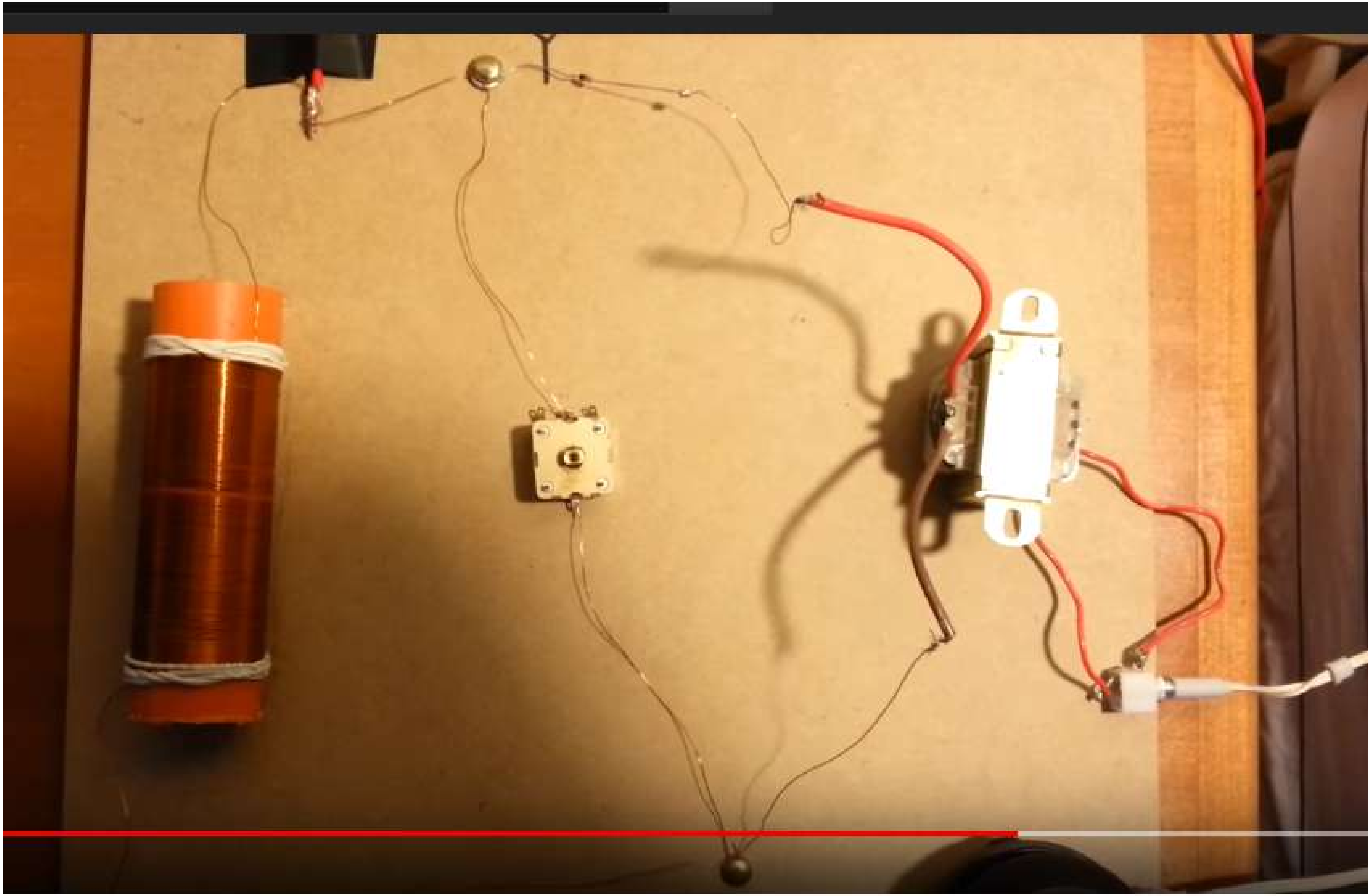


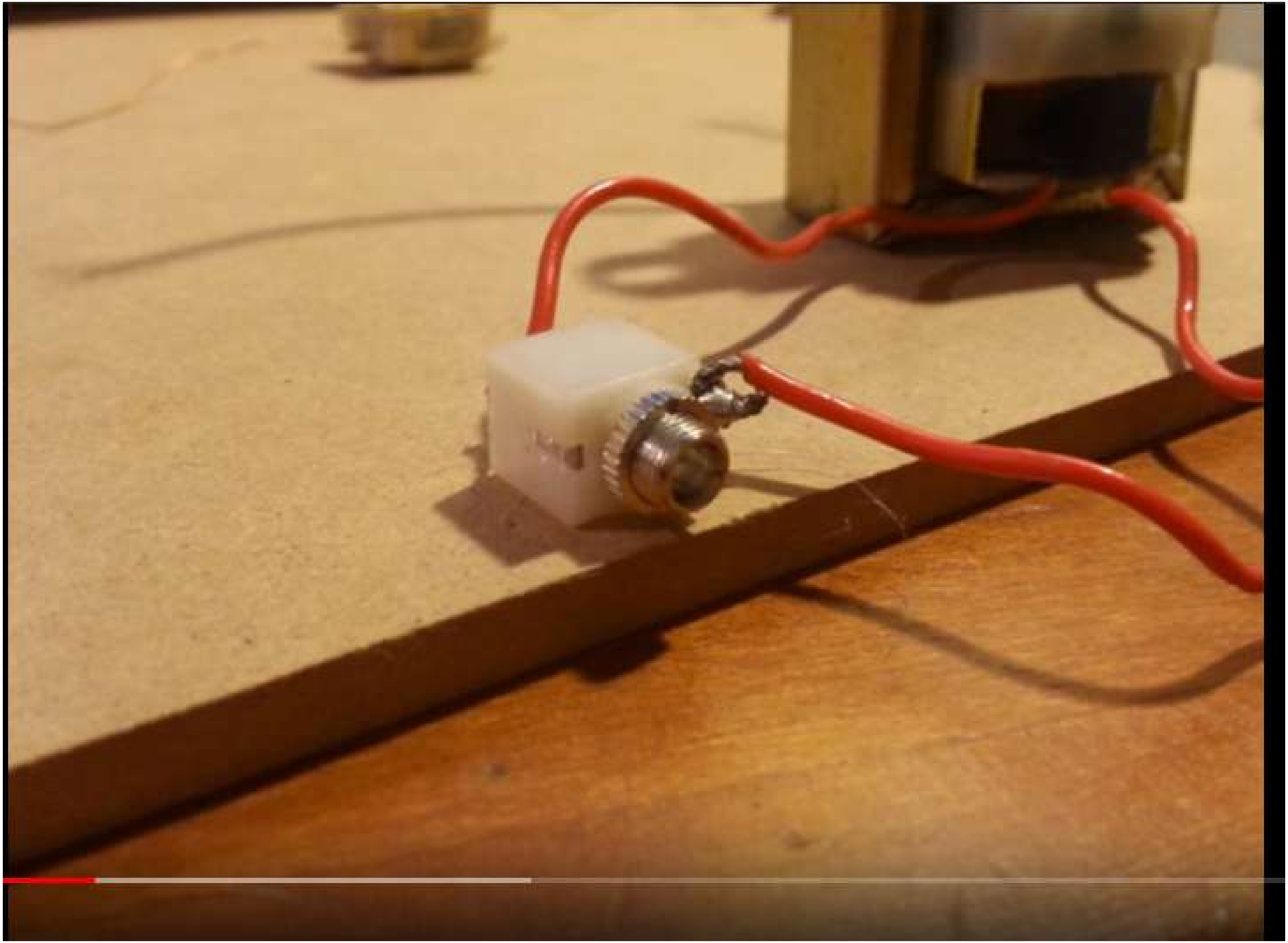





Search
ANTENA
D1
CV
220
V
6-9
V
SALIDA
AURICULAR (4-8 Ω)
TIERRA
0:23 / 1:48
Radio Galena
Up next



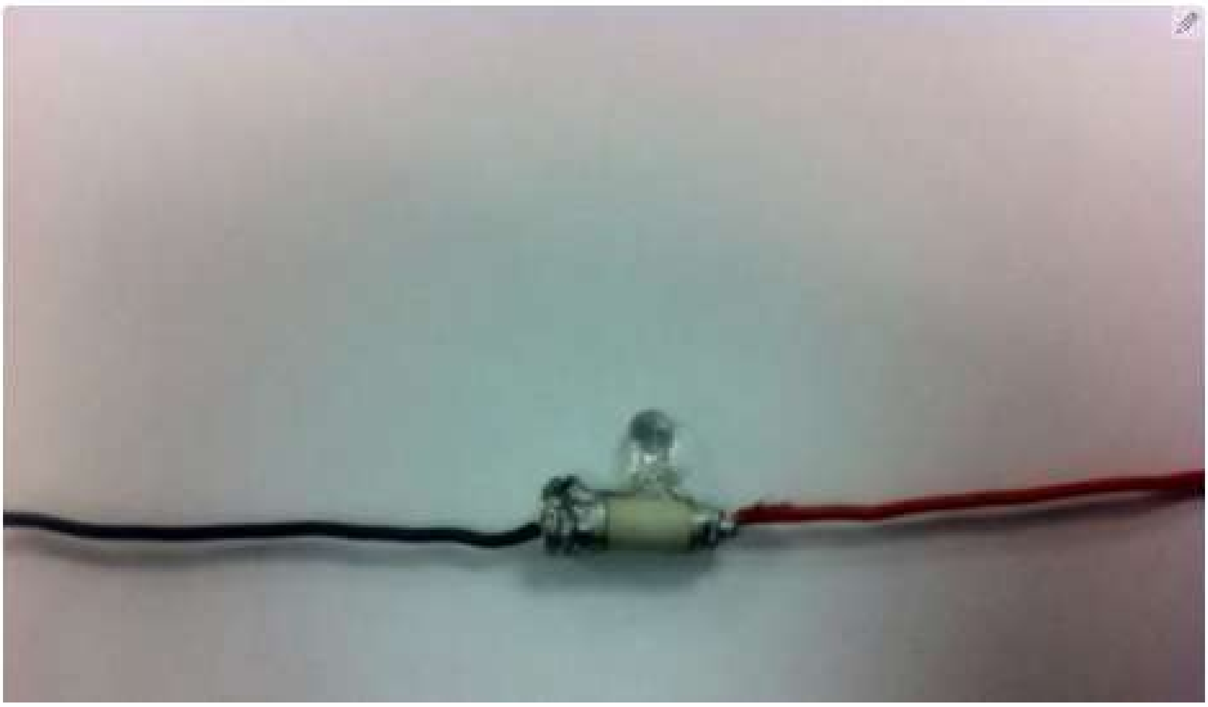


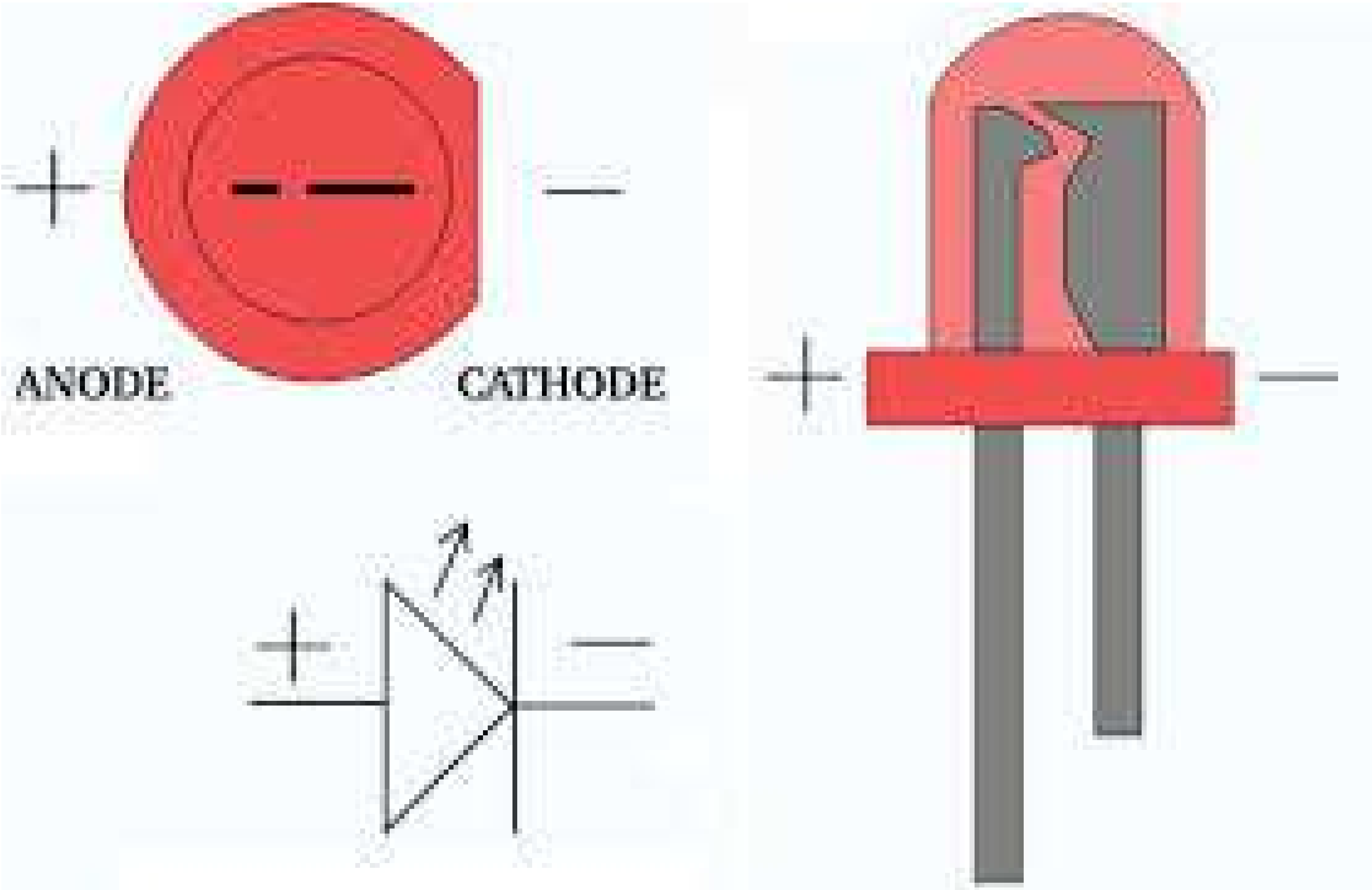


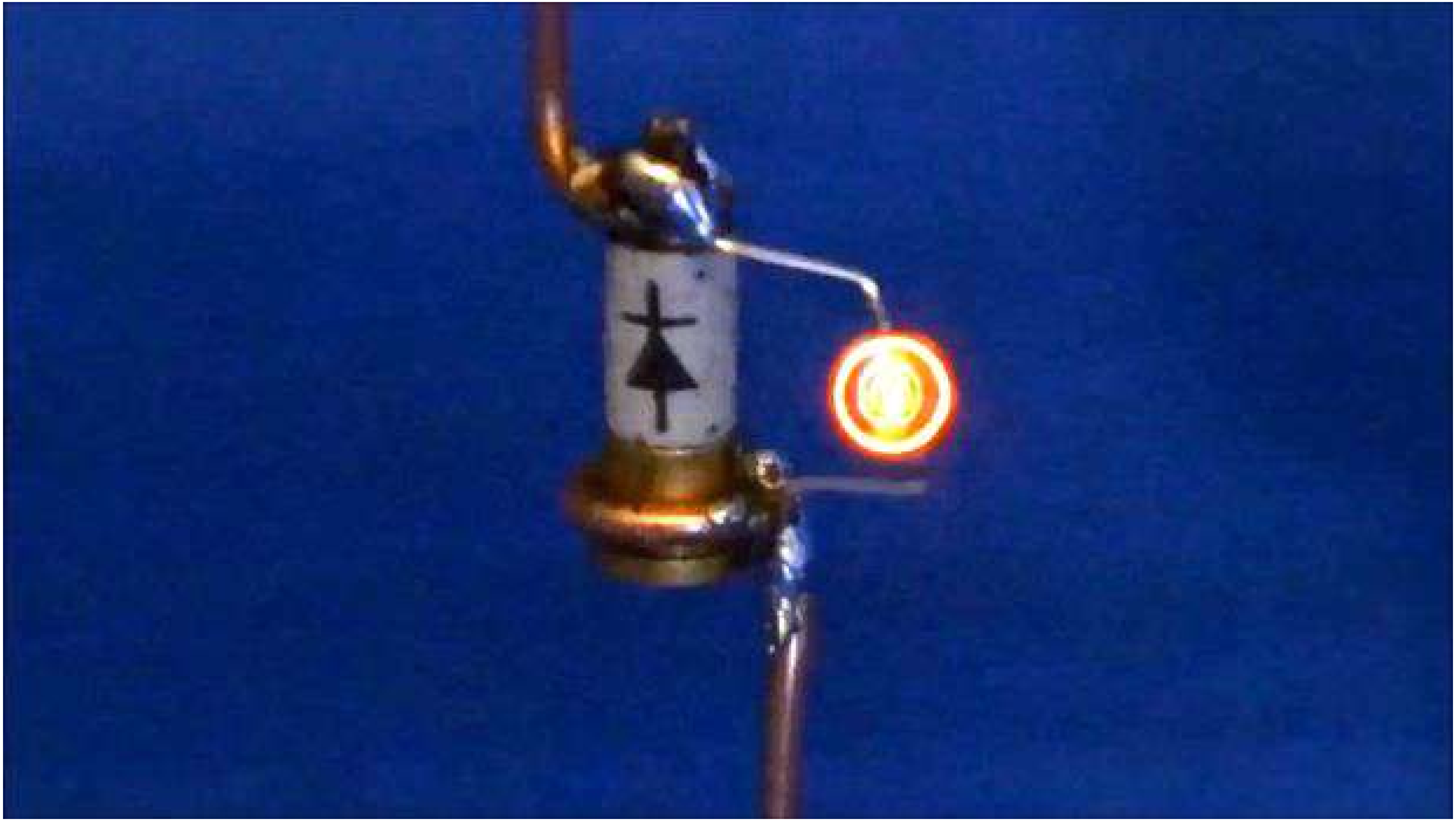
Step 1: LED+RF Diode

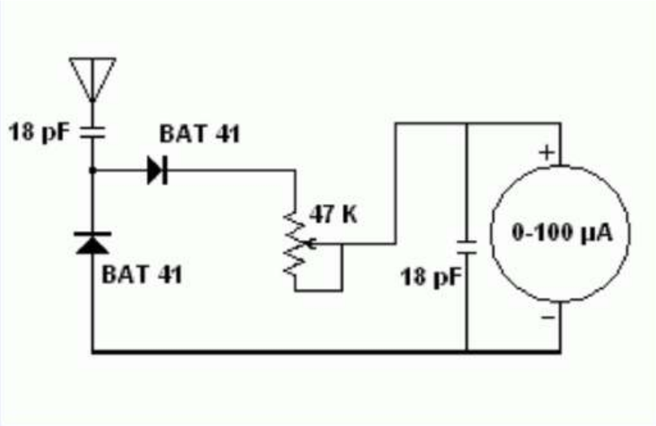
First Solder the led parallel to the Rf diode

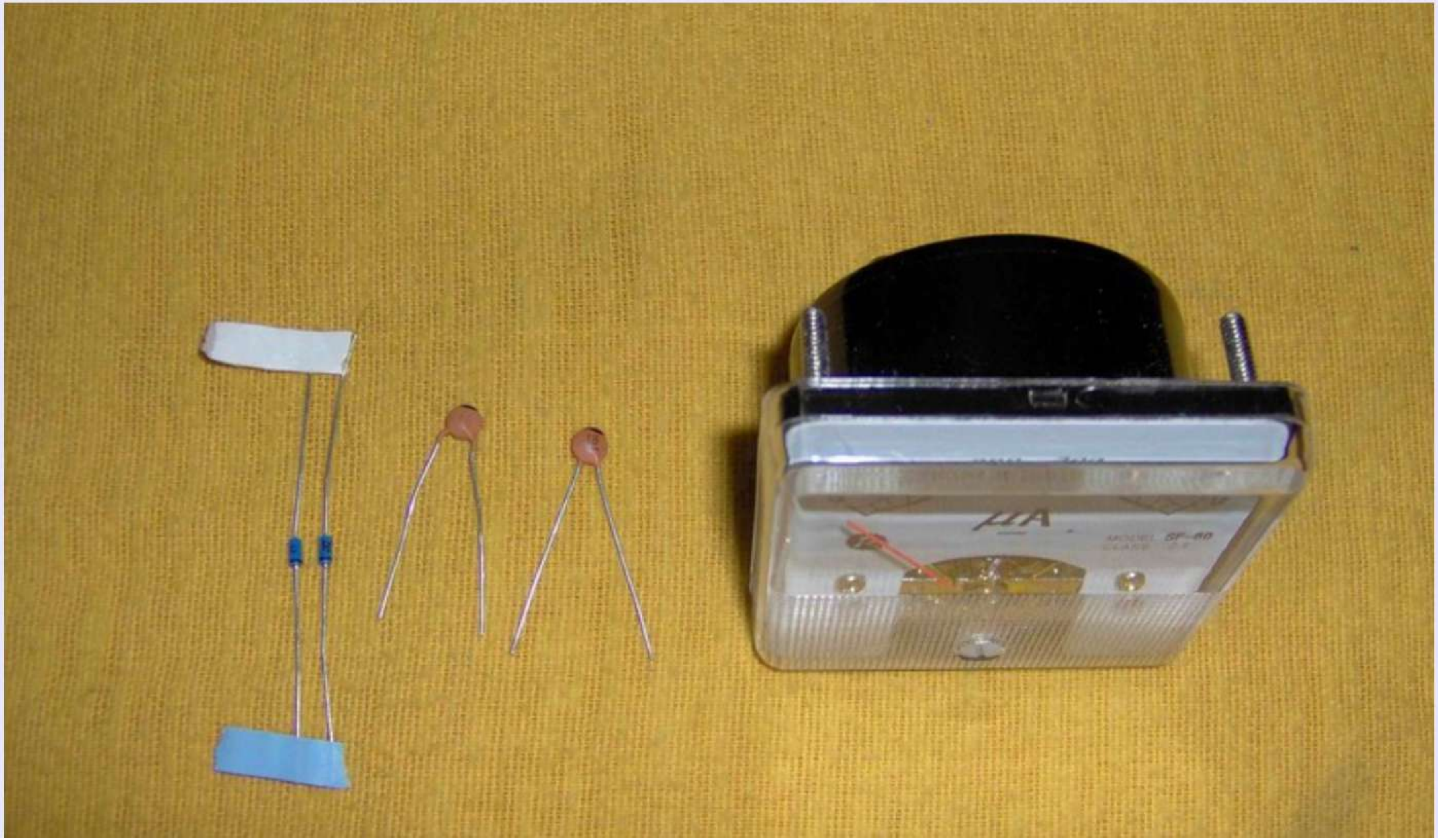
Step 2: RF Diode+ LED+ Wires

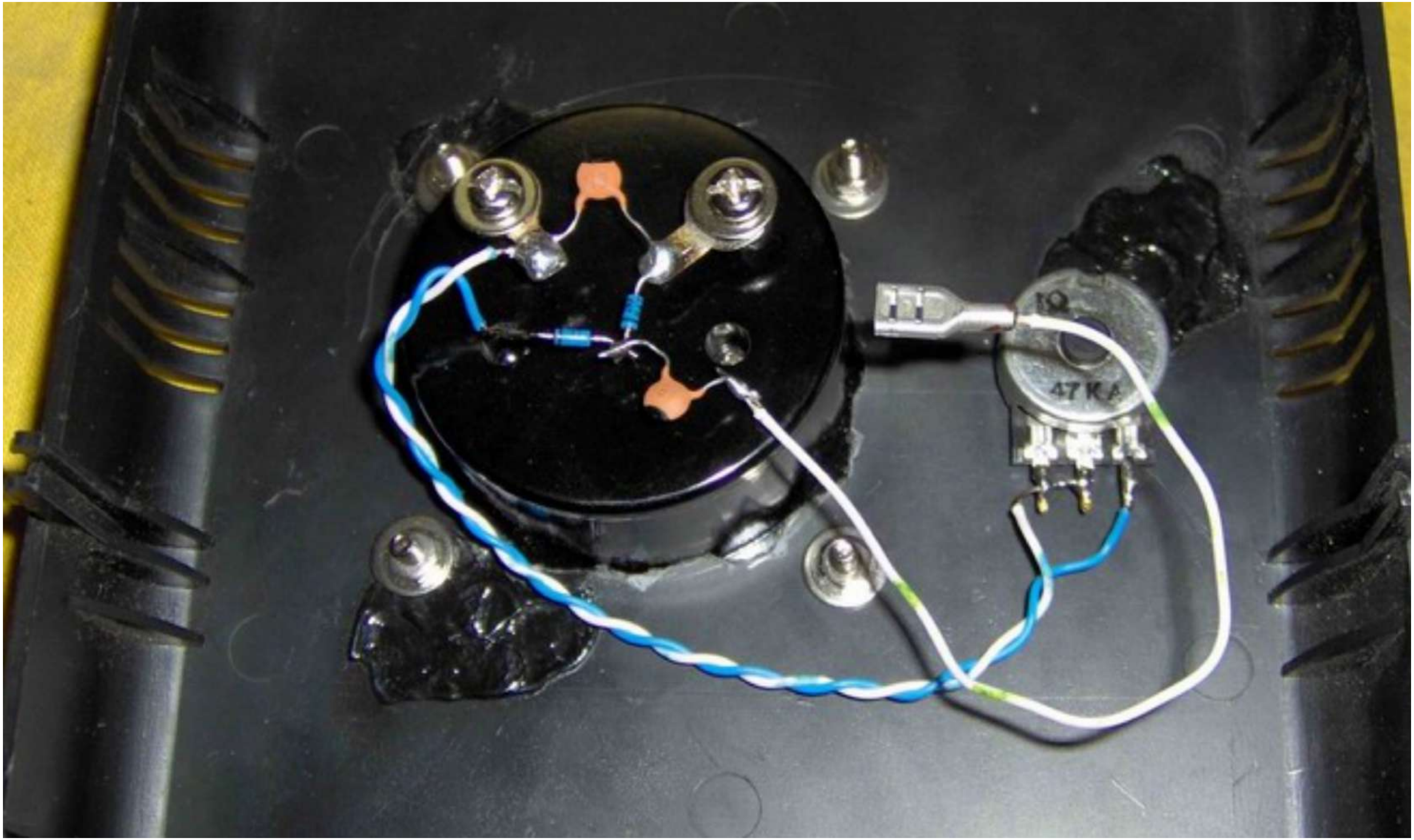



+
ANODE
–
CATHODE
+
–
+
–




18 pF
BAT 41
47 K
BAT 41
18 pF
0-100 µA
+
–


µA


47 KA

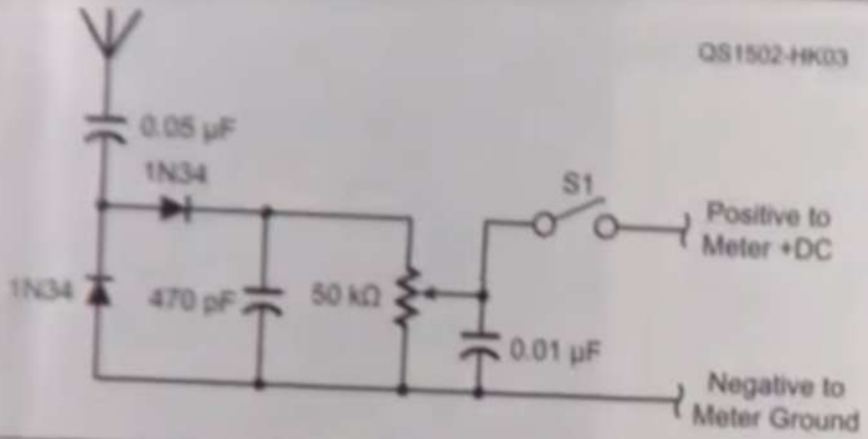
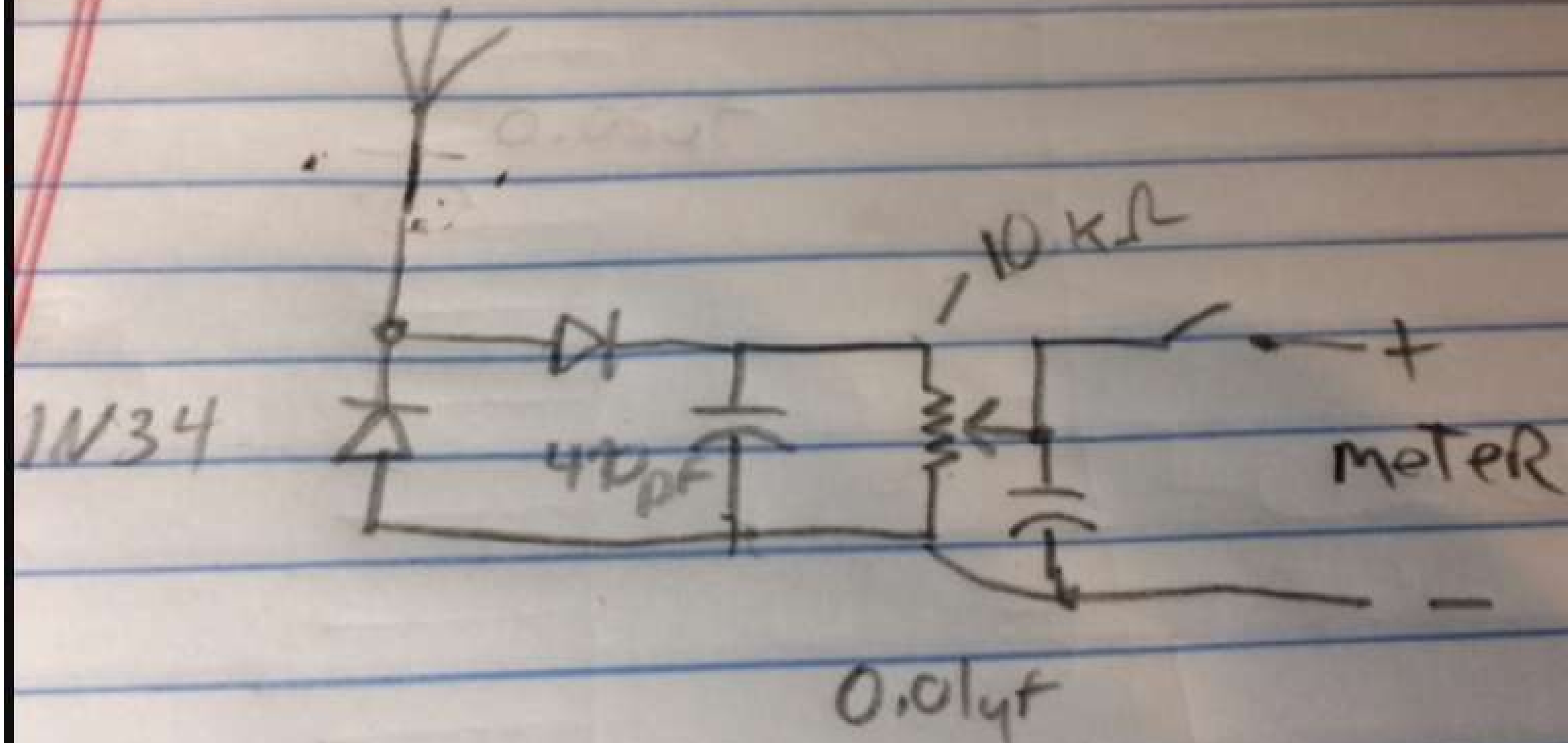


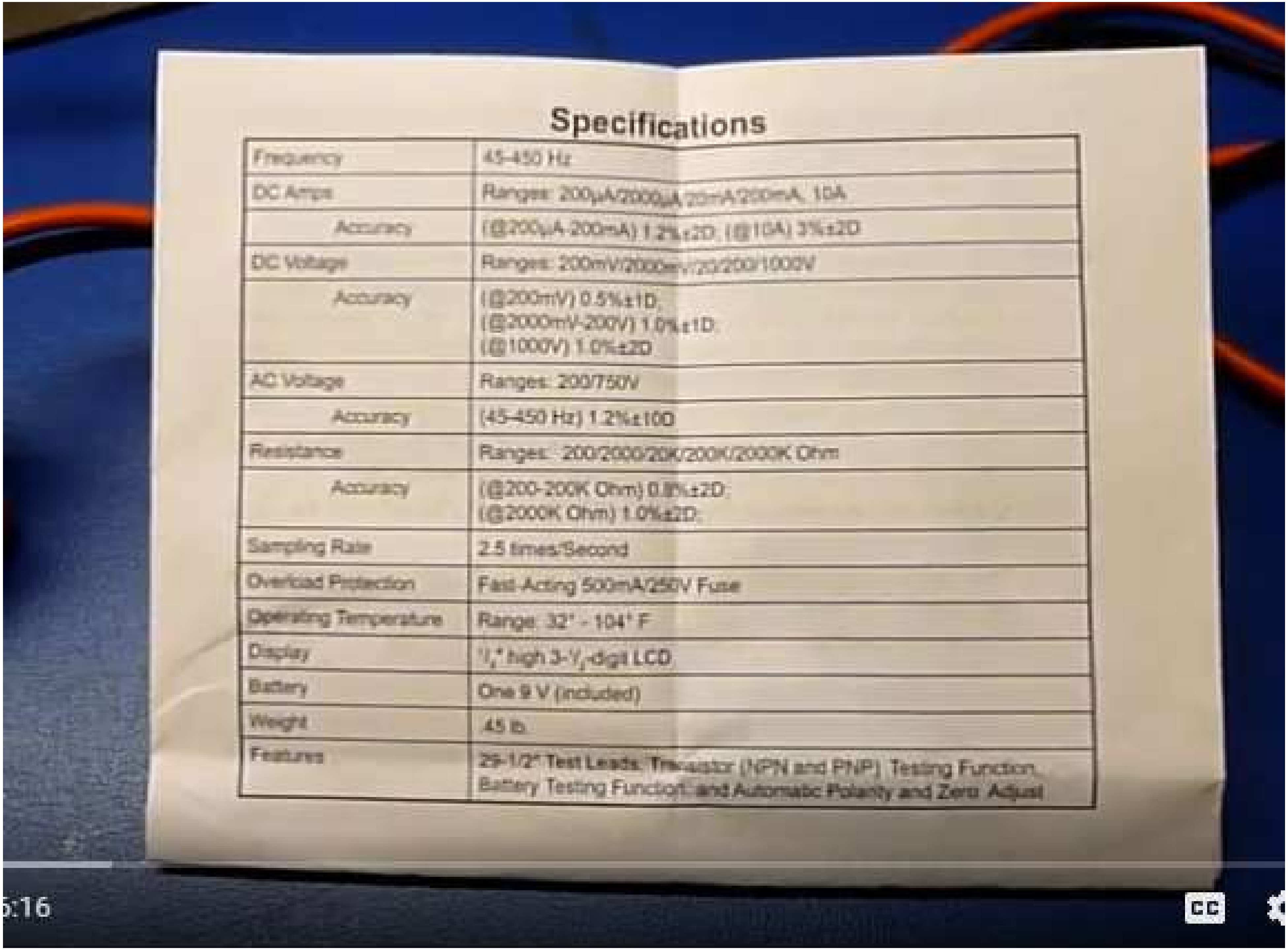
Figure 3 — The schematic for the field strength detector board.

Figure 4 — The detector board mounted inside the multimeter case. The bottom

Figure 5 — The original multimeter and its up-



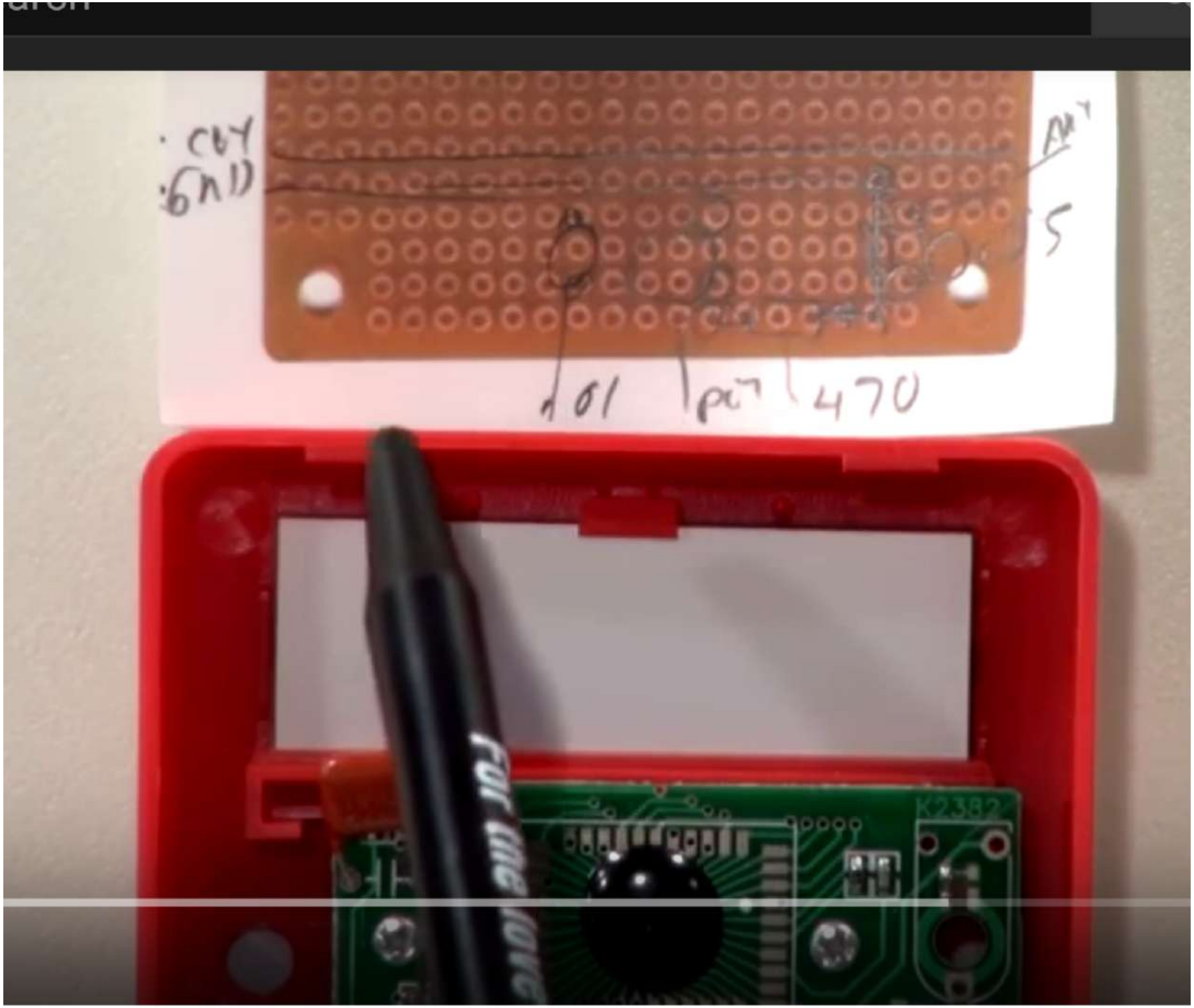
1 000 000 000 000



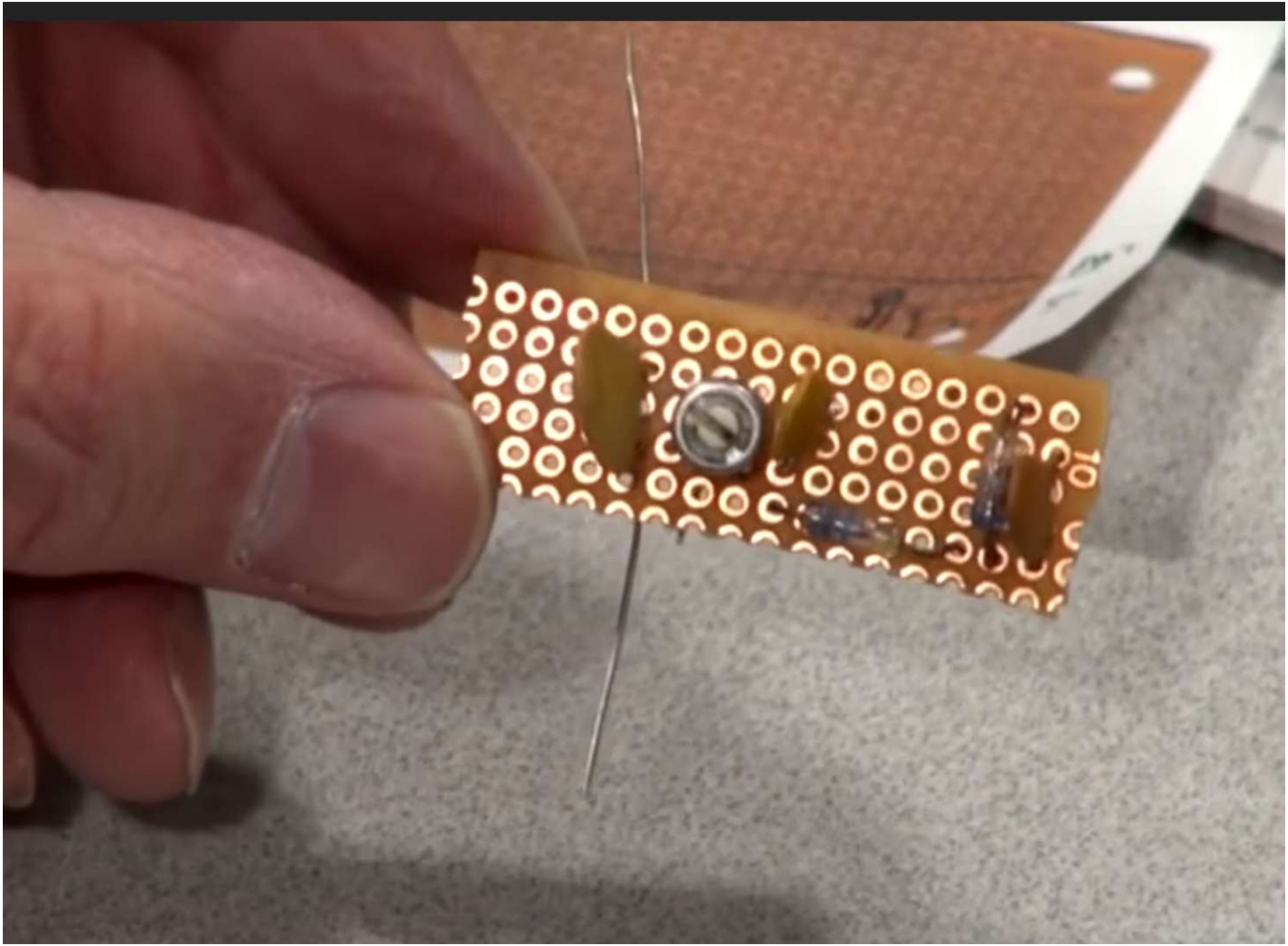
Specifications

Frequency	45-450 Hz
DC Amps	Ranges: 200μA/2000μA/20mA/200mA, 10A
Accuracy	(@200μA-200mA) 1.2%±2D; (@10A) 3%±2D
DC Voltage	Ranges: 200mV/2000mV/20/200/1000V
Accuracy	(@200mV) 0.5%±1D; (@2000mV-200V) 1.0%±1D; (@1000V) 1.0%±2D
AC Voltage	Ranges: 200/750V
Accuracy	(45-450 Hz) 1.2%±10D
Resistance	Ranges: 200/2000/20K/200K/2000K Ohm
Accuracy	(@200-200K Ohm) 0.8%±2D; (@2000K Ohm) 1.0%±2D;
Sampling Rate	2.5 times/Second
Overload Protection	Fast-Acting 500mA/250V Fuse
Operating Temperature	Range: 32° - 104° F
Display	1/2" high 3-1/2-digit LCD
Battery	One 9 V (included)
Weight	.45 lb.
Features	29-1/2" Test Leads; Transistor (NPN and PNP) Testing Function, Battery Testing Function and Automatic Polarity and Zero Adjust


CEN-TECH
7 FUNCTION
DIGITAL
MULTIMETER
CEN-TECH



Up next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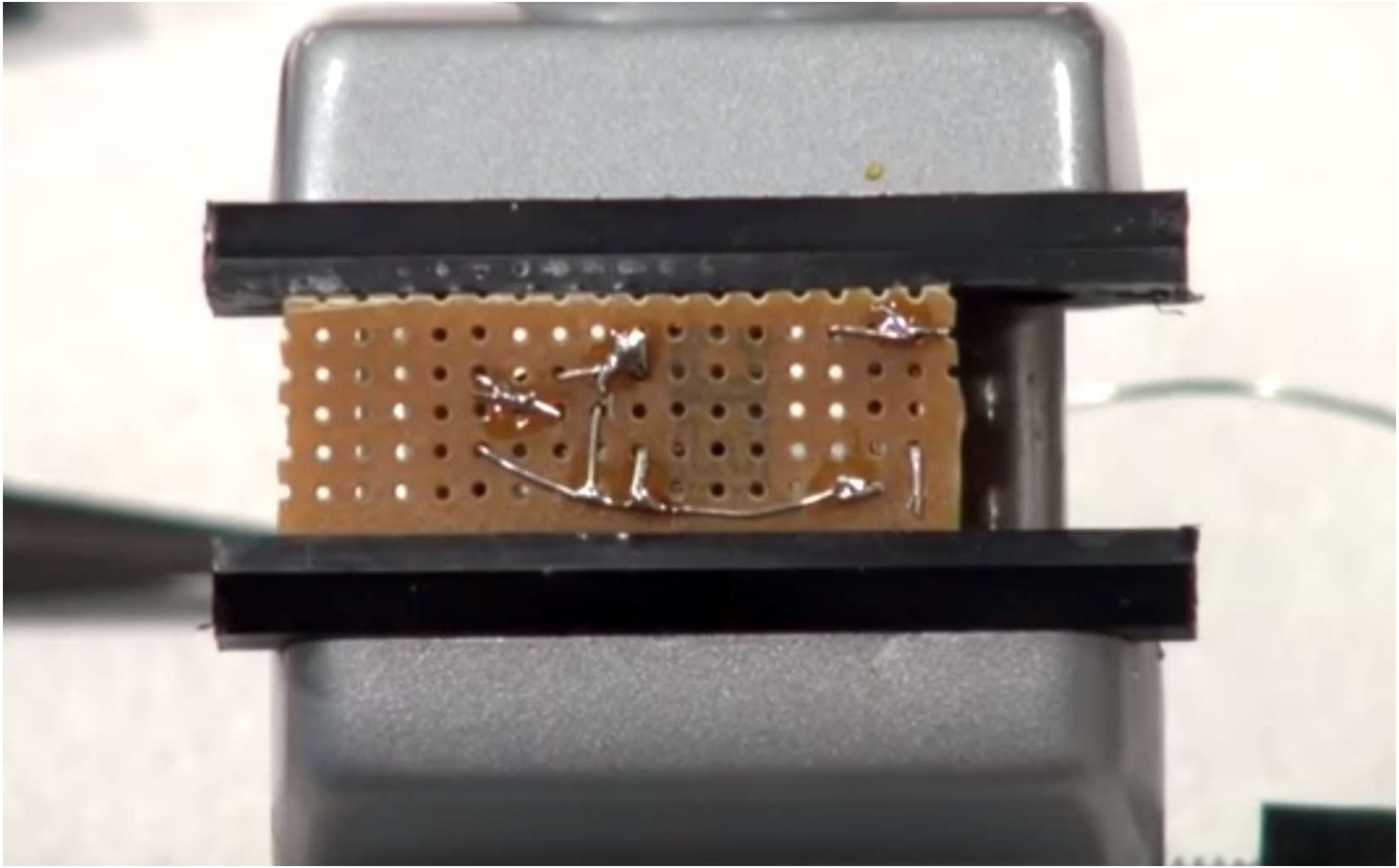
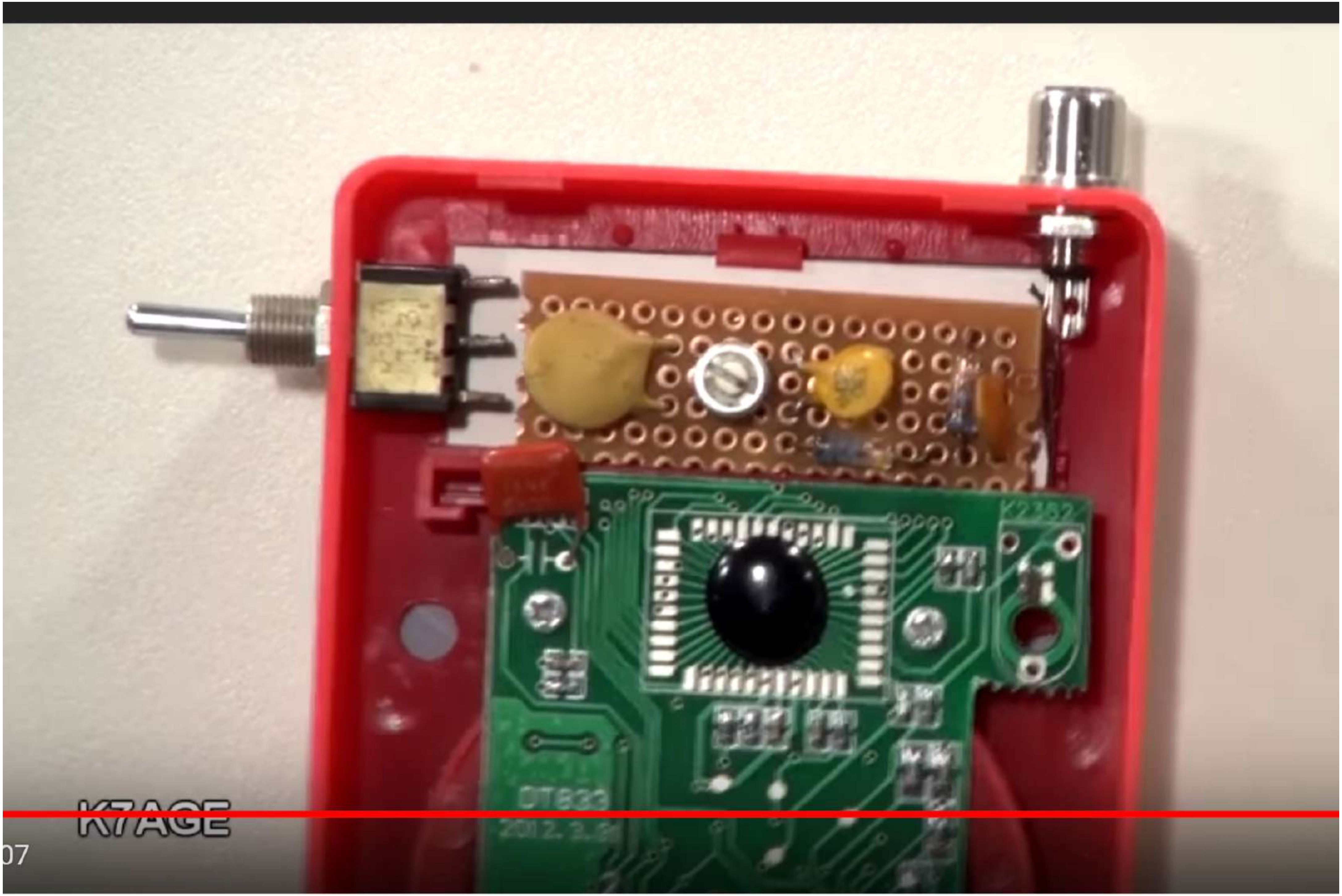
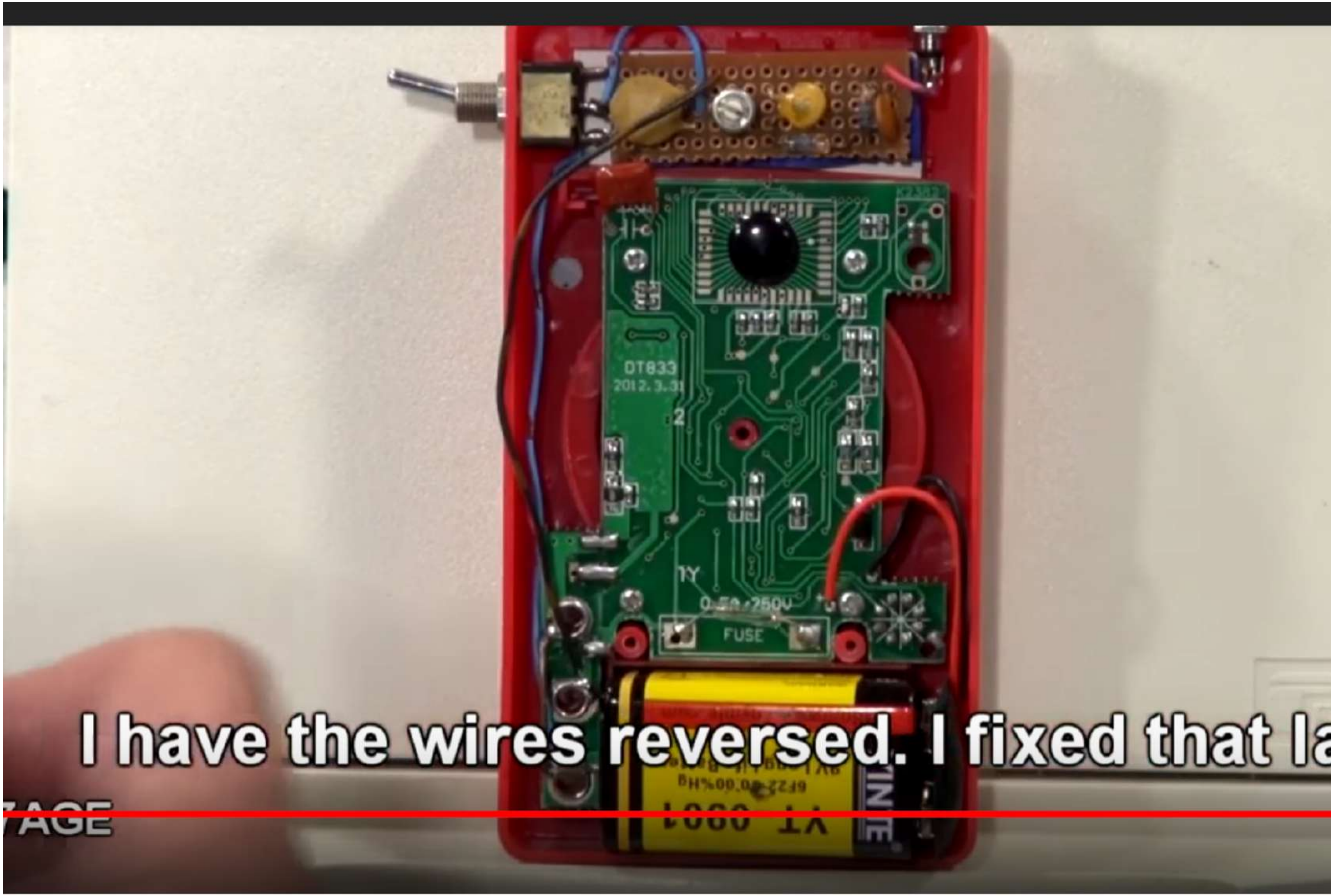
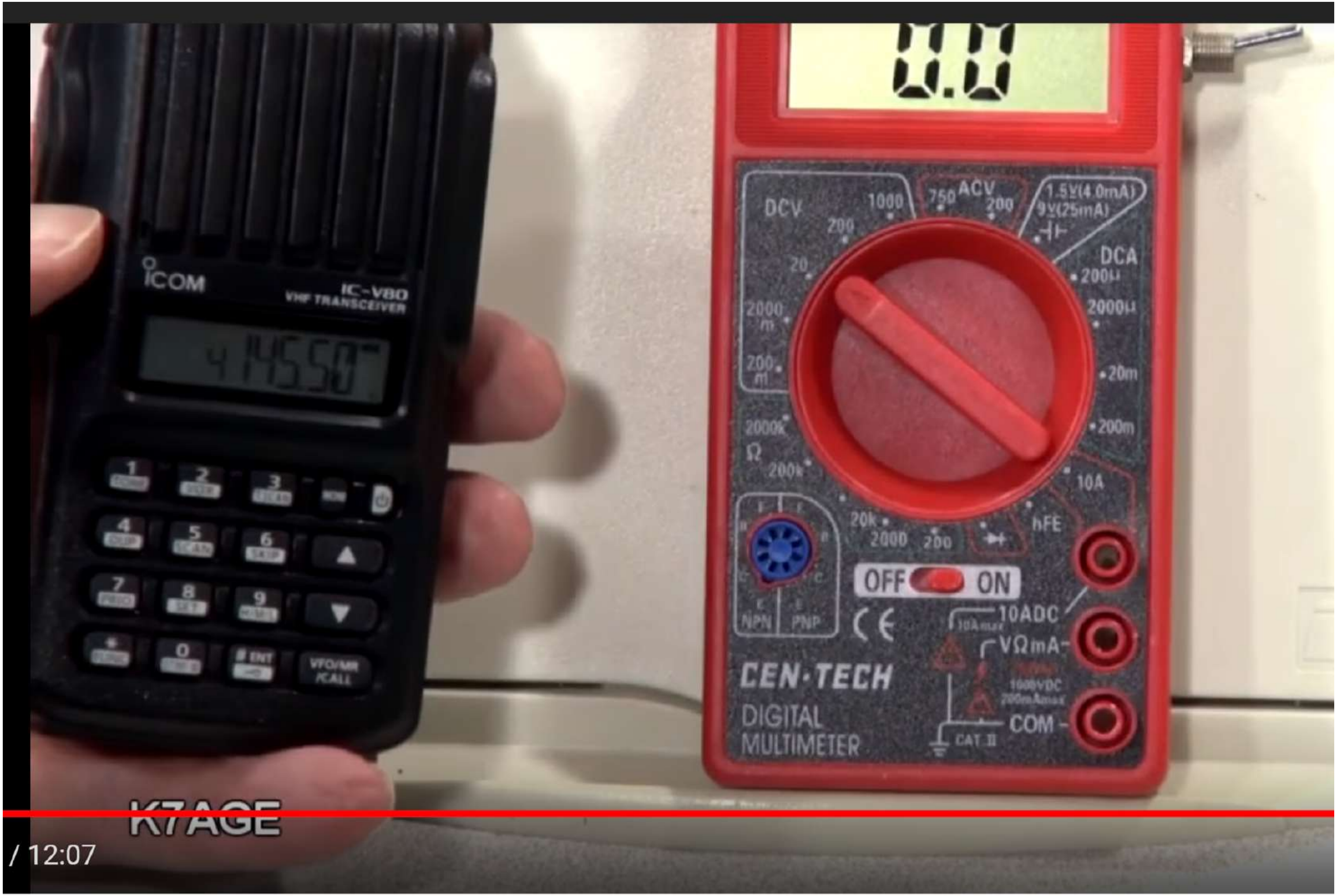
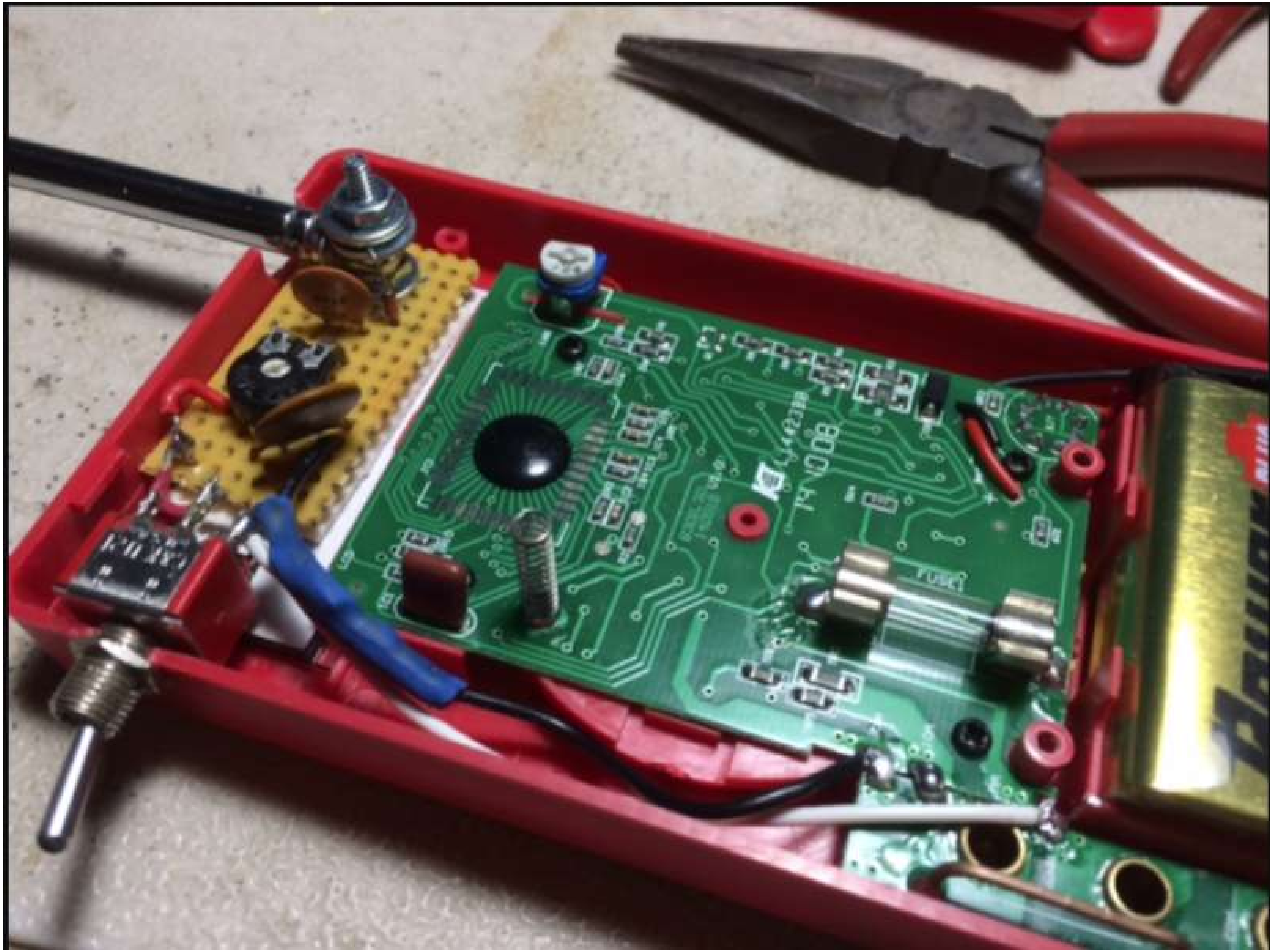
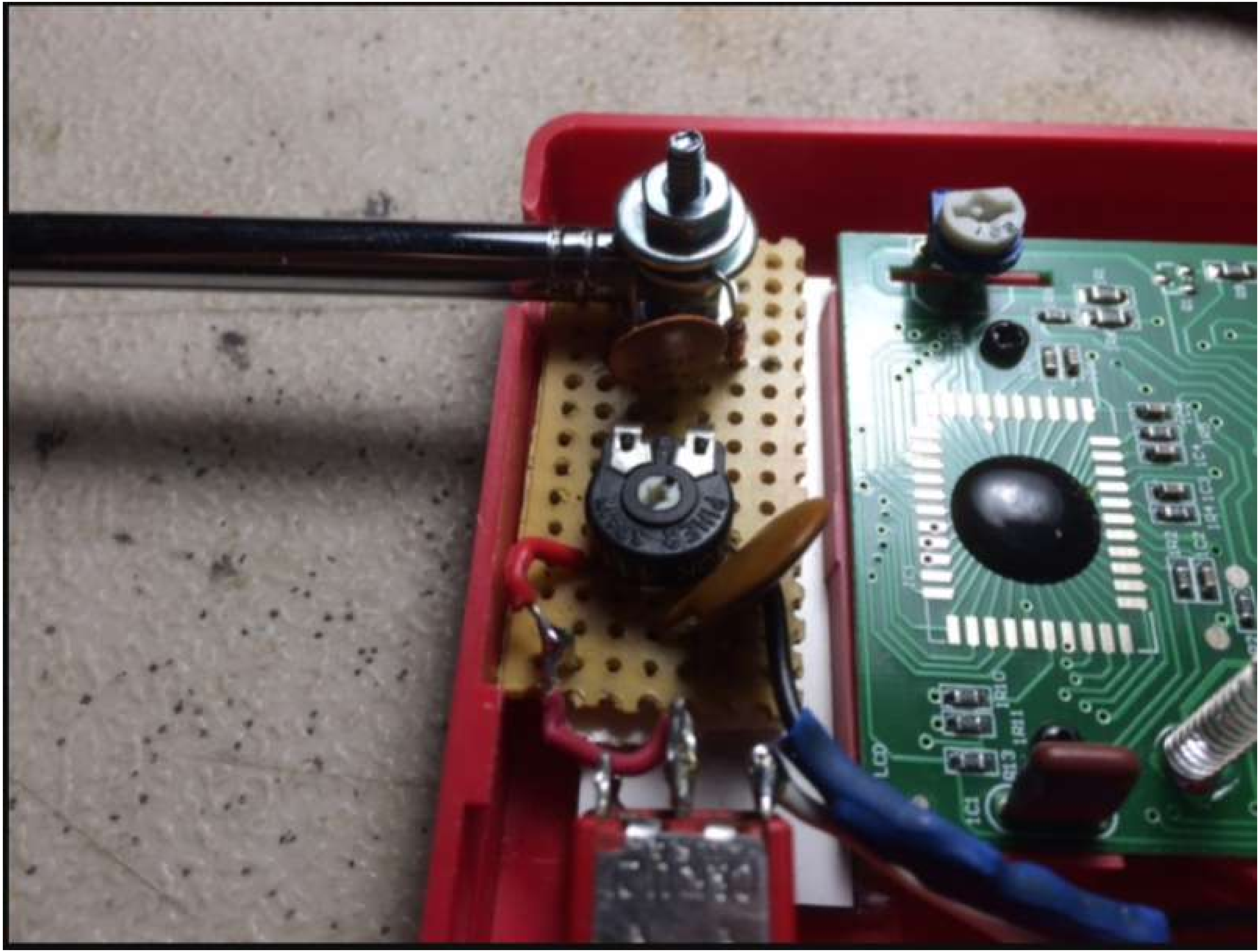


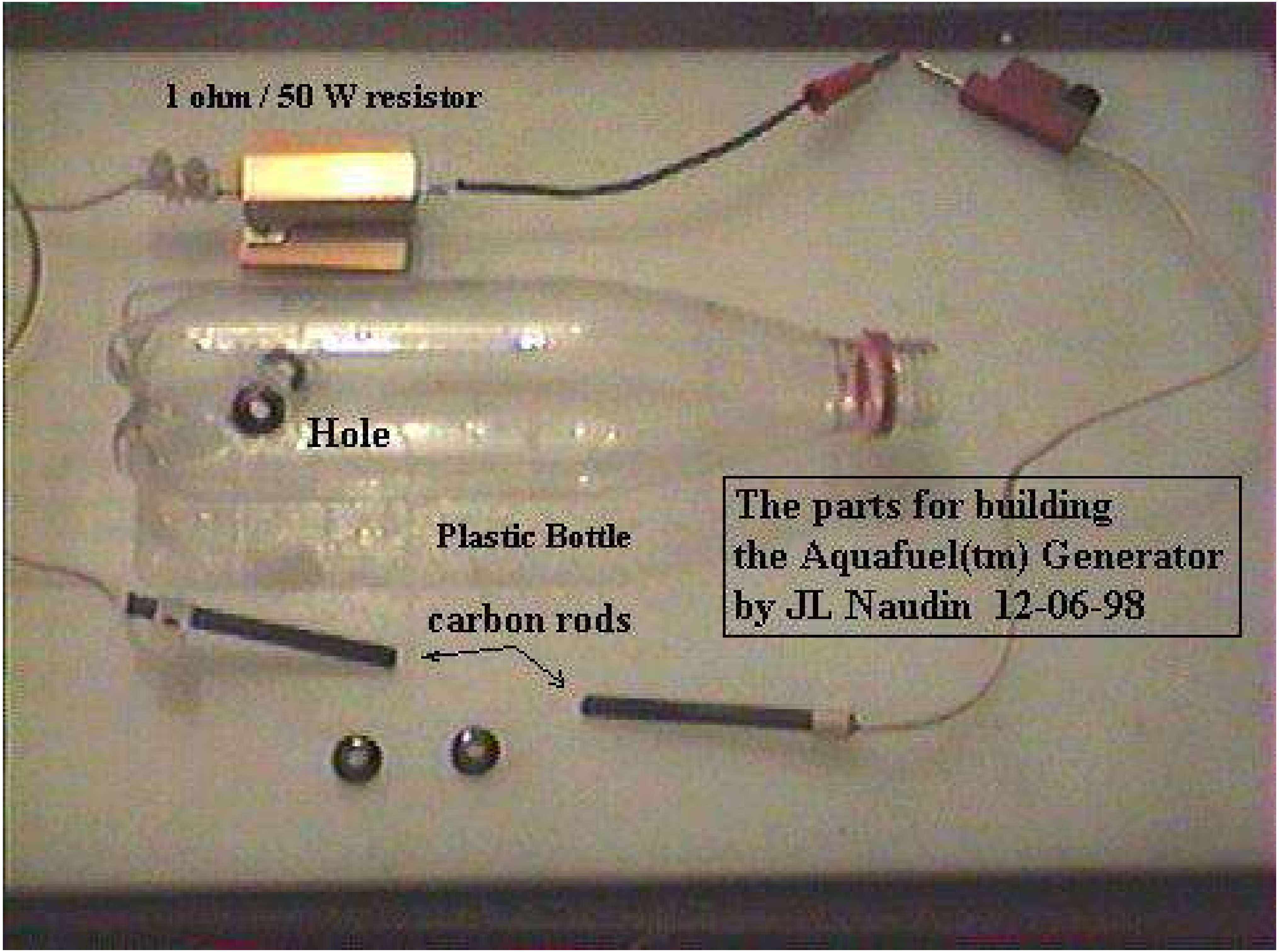

K7AGE
DT833
07

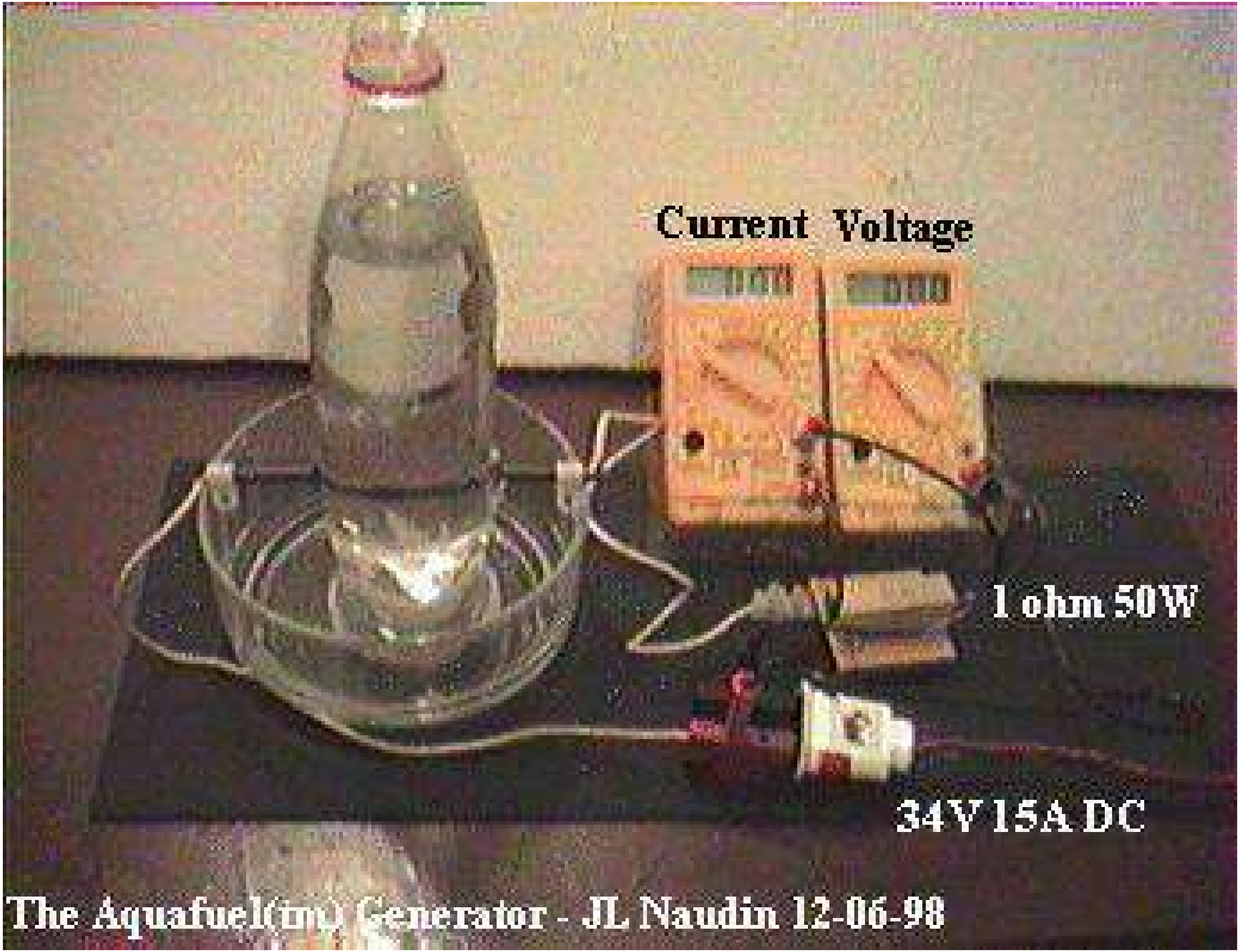

DT833
2012.3.31
FUSE
I have the wires reversed. I fixed that la
AGE

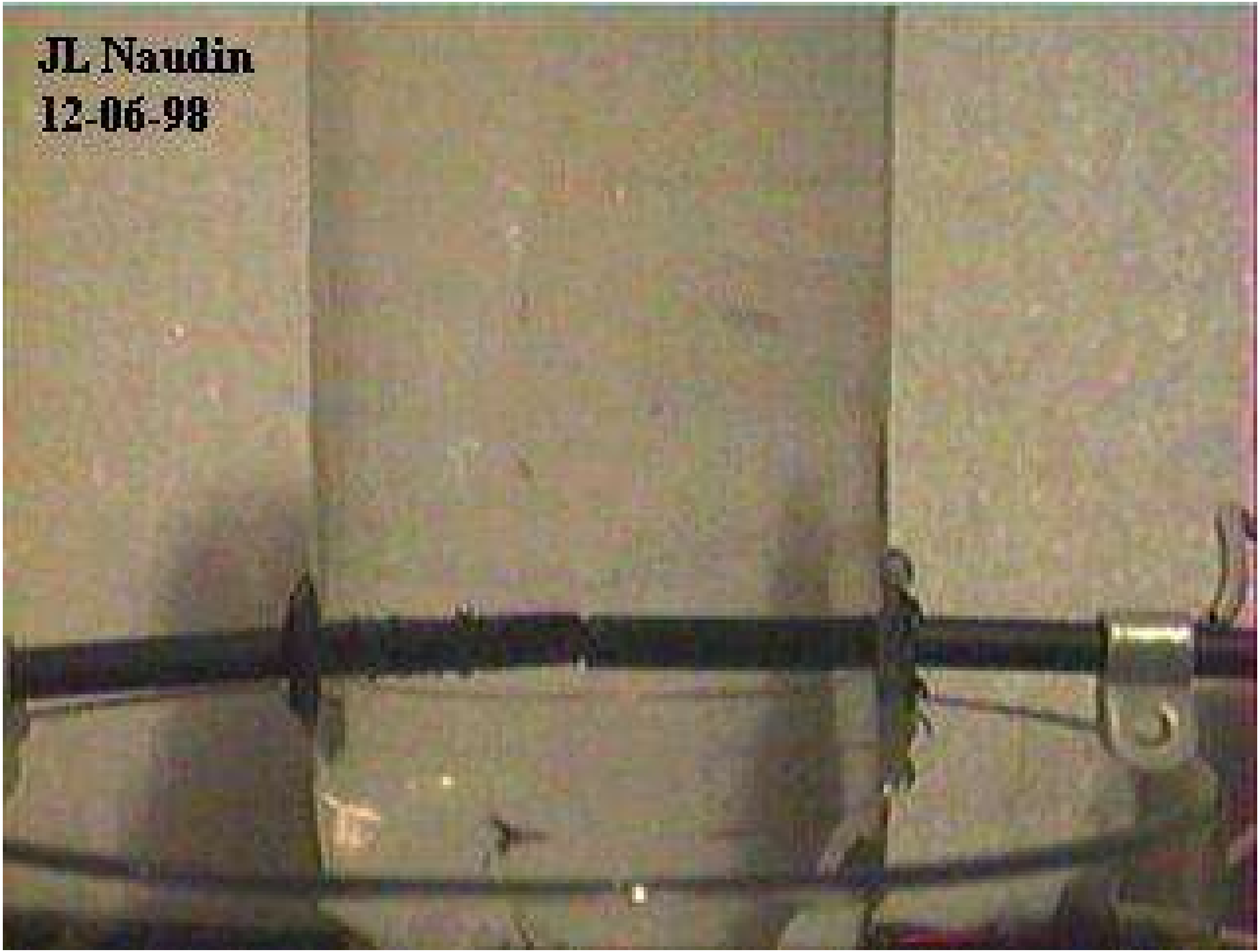

ICOM
IC-V80
VHF TRANSCEIVER
CEN·TECH
DIGITAL
MULTIMETER
OFF
ON
DCV
ACV
DCA
10ADC
VΩmA
COM
K7AGE
/ 12:07

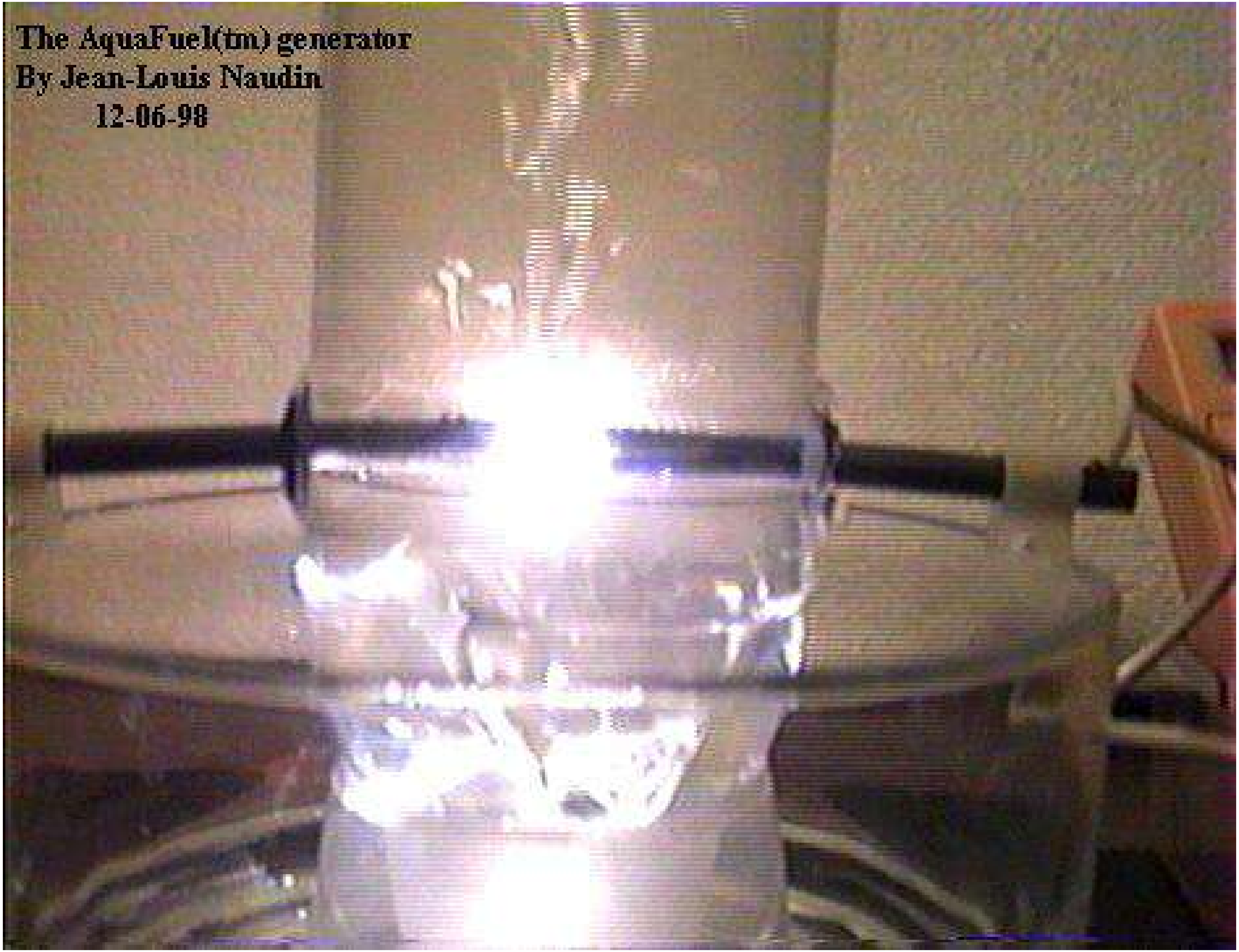

FUSE

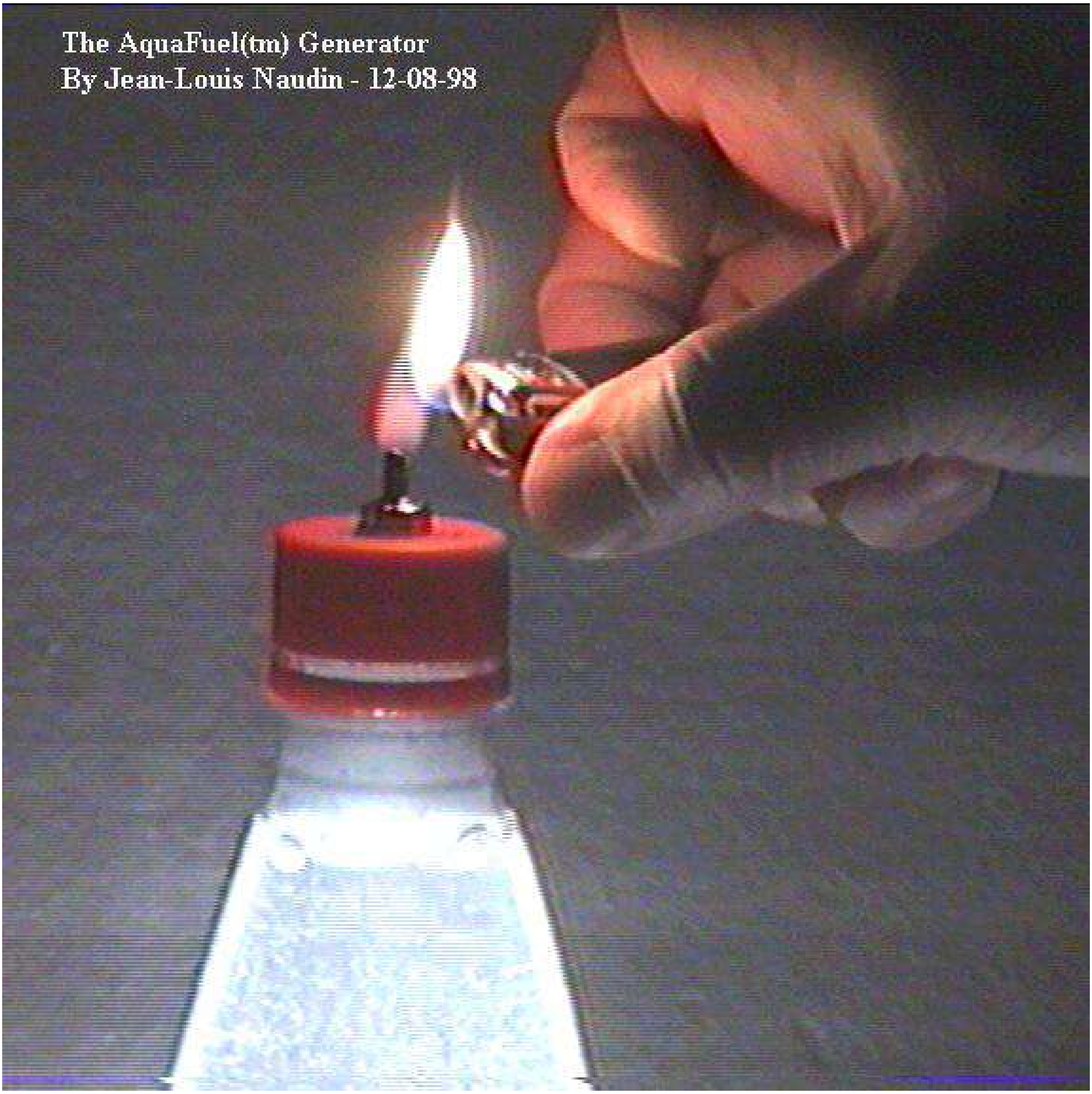



1 ohm / 50 W resistor
Hole
Plastic Bottle
carbon rods
The parts for building
the Aquafuel(tm) Generator
by JL Naudin 12-06-98

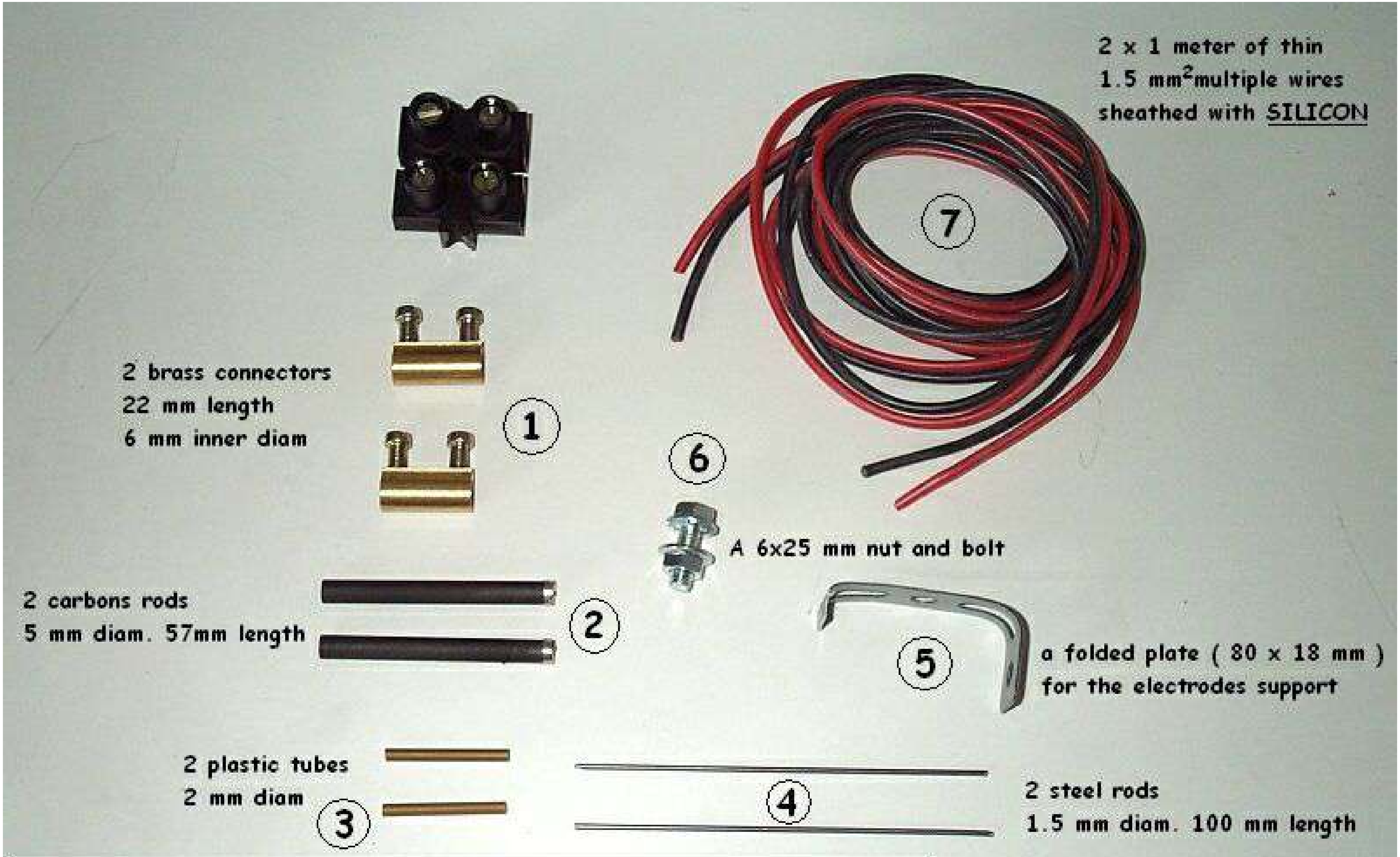

Current Voltage
1 ohm 50W
34V 15A DC
The Aquafuel(tm) Generator - JL Naudin 12-06-98


JL Naudin
12-06-98


The AquaFuel(tm) generator
By Jean-Louis Naudin
12-06-98


The AquaFuel(tm) Generator
By Jean-Louis Naudin - 12-08-98

BingoFuel Reactor v1.1 - The components for the reactor and and reaction chamber
(c) 2003 by Jean-Louis Naudin - Email: Jnaudin509@aol.com - http://www.jlnlabs.org



BingoFuel Reactor v1.1 - The components for the plasma igniters
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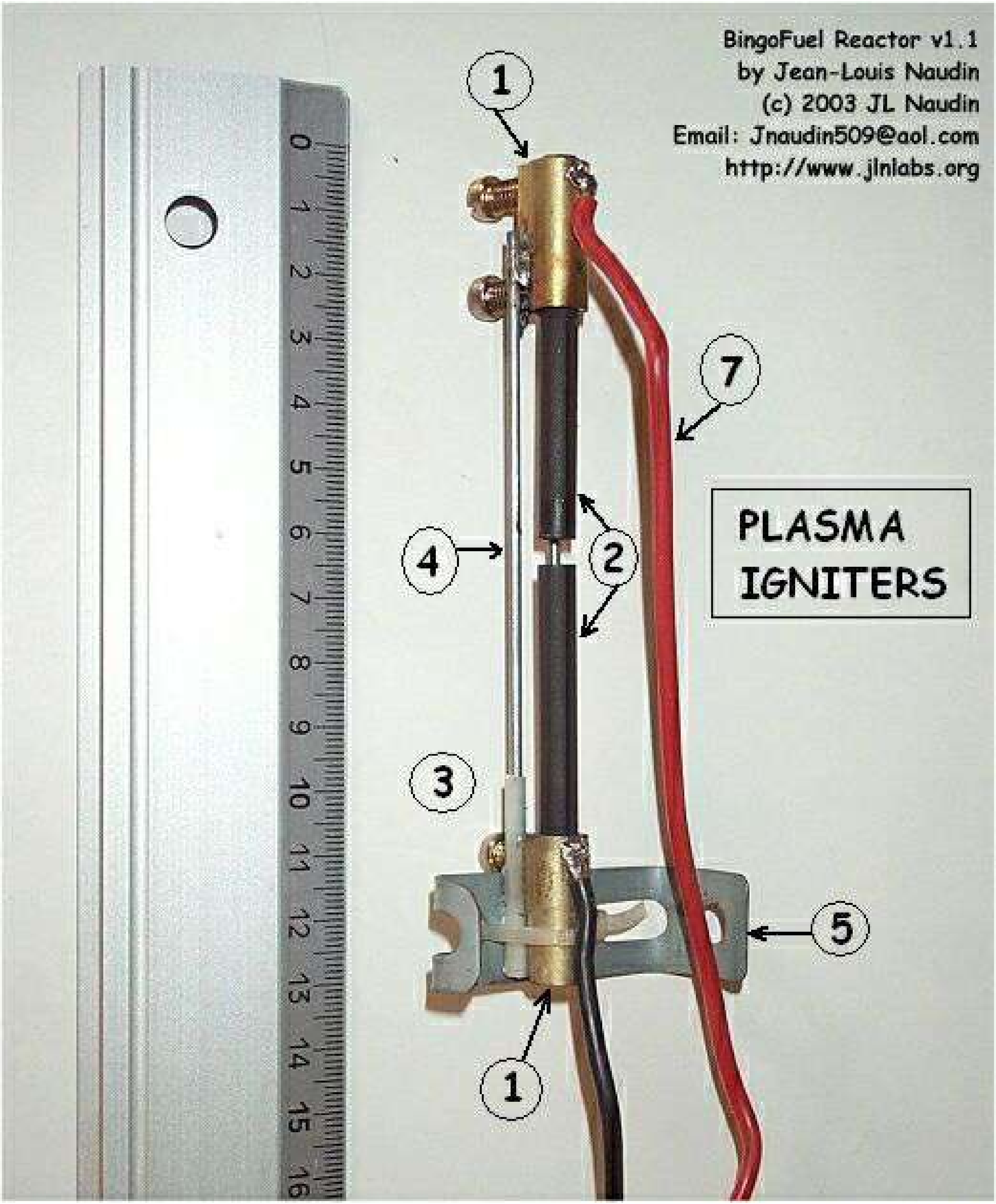
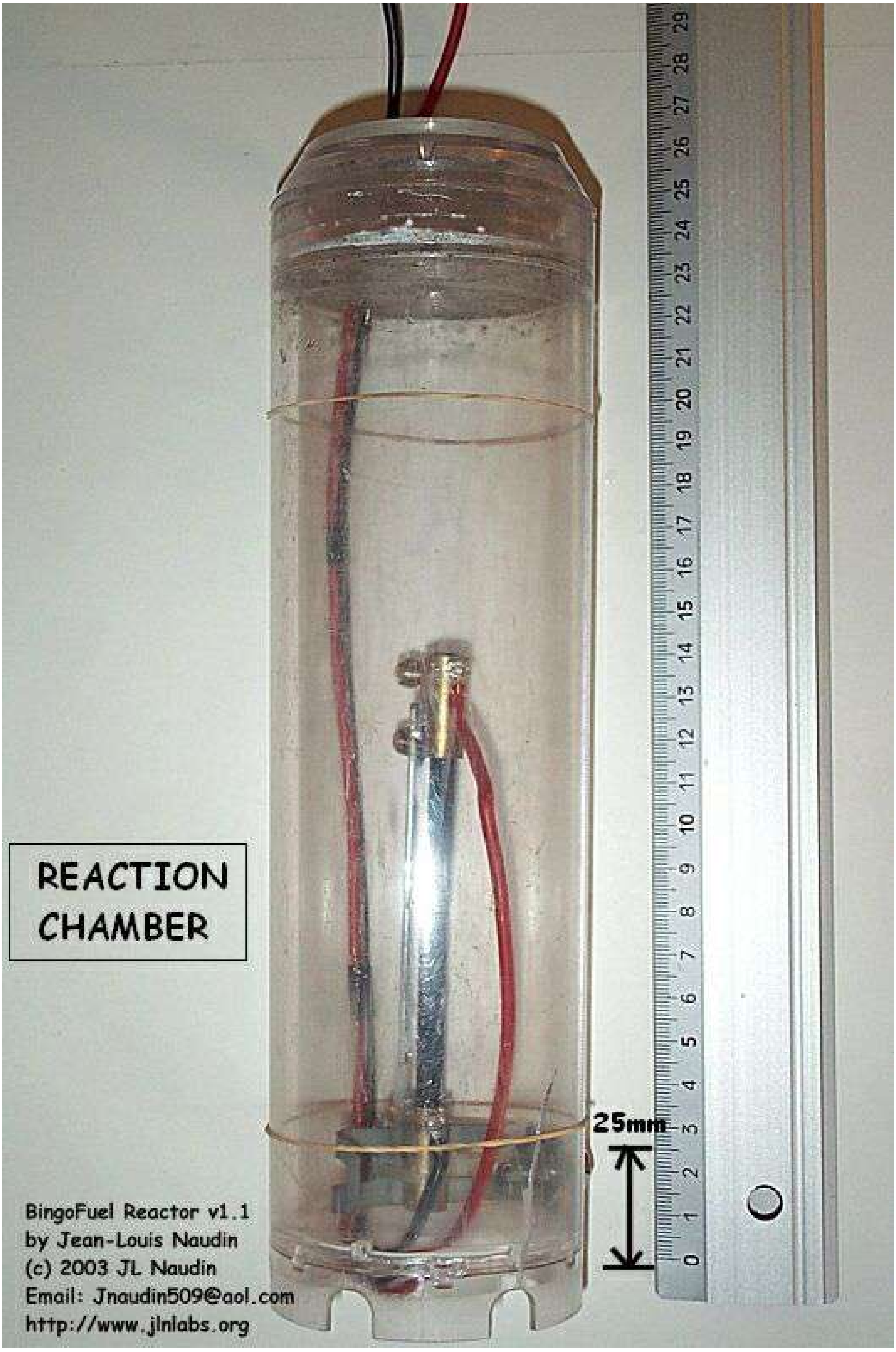
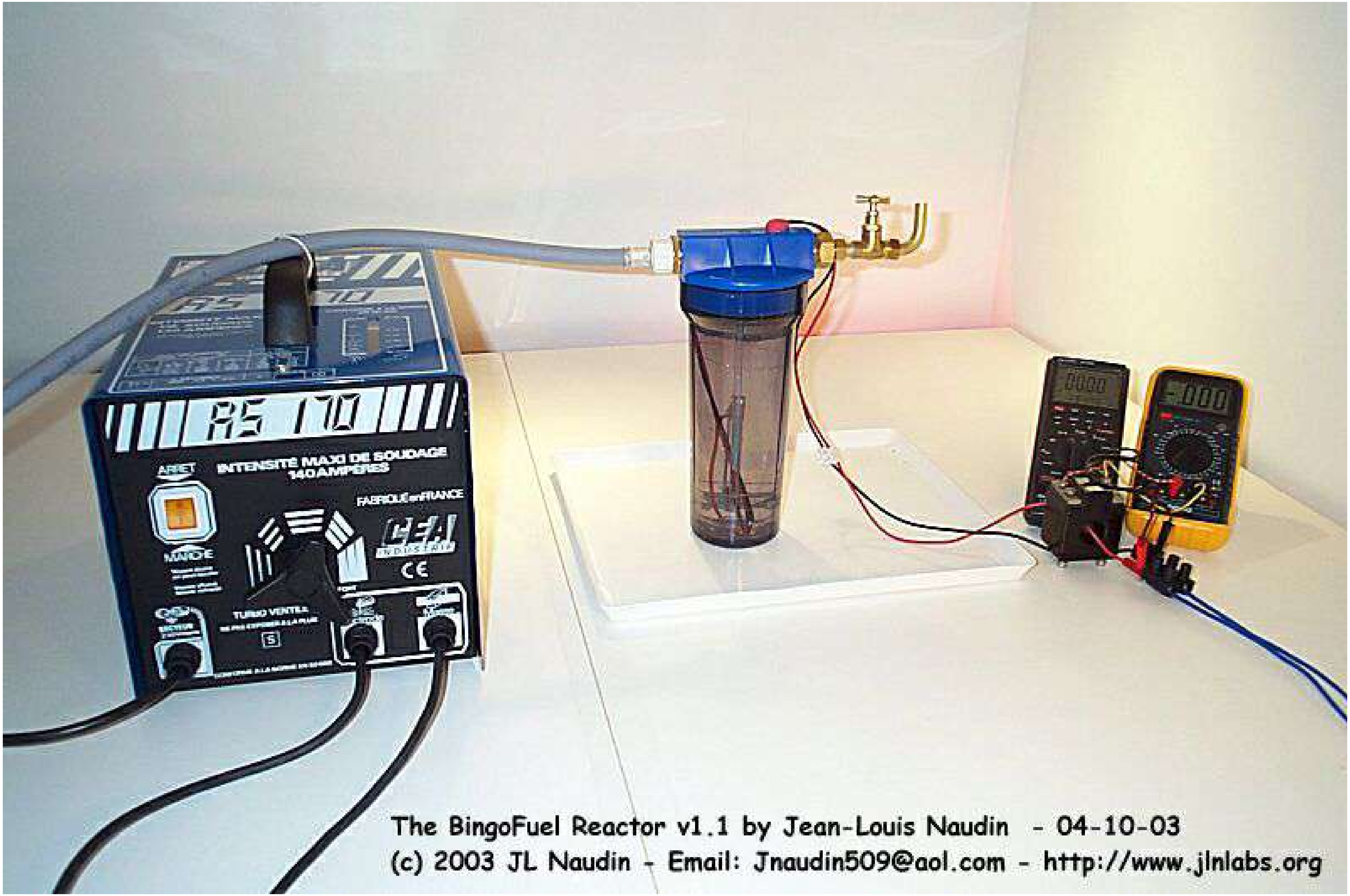
Carbon rods
ZINC
CARBON
BATTERY
4.5V Zinc Carbon Battery


BingoFuel Reactor v1.1
by Jean-Louis Naudin
(c) 2003 JL Naudin
Email: Jnaudin509@aol.com
http://www.jnlabs.org
PLASMA
IGNITERS
1
2
3
4
5
7
1


REACTION
CHAMBER
25mm
BingoFuel Reactor v1.1
by Jean-Louis Naudin
(c) 2003 JL Naudin
Email: Jnaudin509@aol.com
http://www.jlnlabs.org

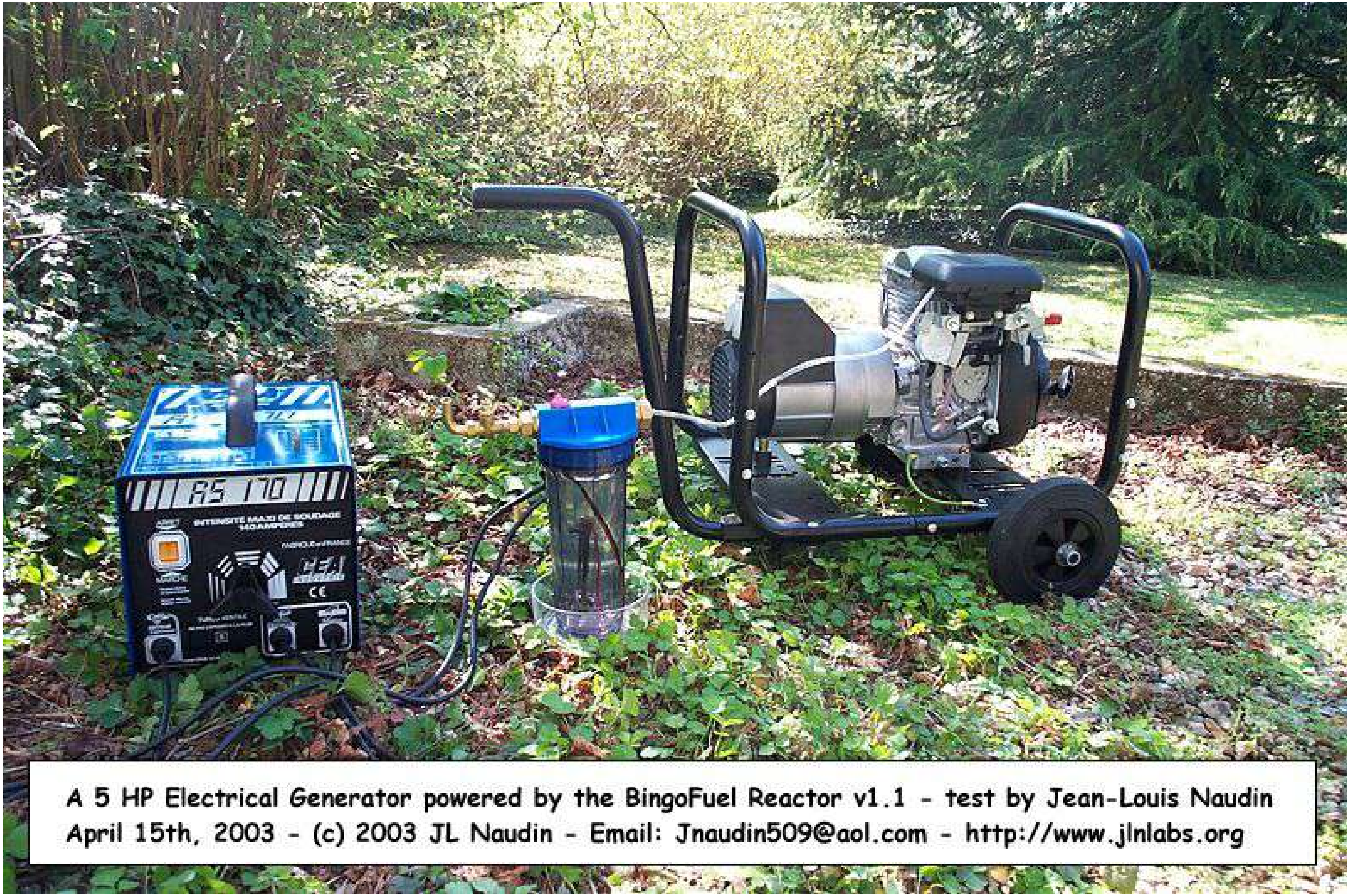

BingoFuel Reactor v1.1 - (c) 2003 by Jean-Louis Naudin
Email: Jnaudin509@aol.com - http://www.jlnlabs.org


RS 170
INTENSITE MAXI DE SOUDAGE
140 AMPERES
ARRET
MARCHE
FABRIQUE en FRANCE
CEA
CE
TURBO VENTILE
The BingoFuel Reactor v1.1 by Jean-Louis Naudin - 04-10-03
(c) 2003 JL Naudin - Email: Jnaudin509@aol.com - http://www.jlnlabs.org


OUTPUT = 180 L/h
of synthetic gas
OUTPUT = 900 L/h of fuel mixture
V=30.8V AC I = 81.6 A
The BingoFuel Reactor v1.1 by Jean-Louis Naudin - 04-10-03
(c) 2003 JL Naudin - Email: Jnaudin509@aol.com - http://www.jlnlabs.org

GROUPES ÉLECTROGÈNES MONOPHASÉS

50 hz			Moteur							Alternateur					Options				
Type	Puissance max 230V		Marque	Type	Sécurité huile	Démarrage électrique	HP 3600 tr/mn	h Autonomie	L Réservoir	230V Disjoncteur	Niveau sonore CEE Lwa	dB(A) @ 7 m	Dimensions L x l x h cm	Kg Poids	Kit brouette	Disjoncteur	Quick'lock	Com. à distance	Coffret dém. auto
	kW ISO 8528	kVA Cont.																	
RANGER™ 2500	2,1	2,6	Honda OHC	GC 160	•	x	5	2,2	2	•	**98**	75	58x46x44	30	x	x	x	x	x



A 5 HP Electrical Generator powered by the BingoFuel Reactor v1.1 - test by Jean-Louis Naudin
April 15th, 2003 - (c) 2003 JL Naudin - Email: Jnaudin509@aol.com - http://www.jlnlabs.org

A 5 HP Electrical Generator powered by the BingoFuel Reactor v1.1 - test by Jean-Louis Naudin
April 15th, 2003 - (c) 2003 JL Naudin - Email: Jnaudin509@aol.com - http://www.jlnlabs.org

A 5 HP Electrical Generator powered by the BingoFuel Reactor v1.1 - test by Jean-Louis Naudin
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A 5 HP Electrical Generator powered by the BingoFuel Reactor v1.1 - test by Jean-Louis Naudin
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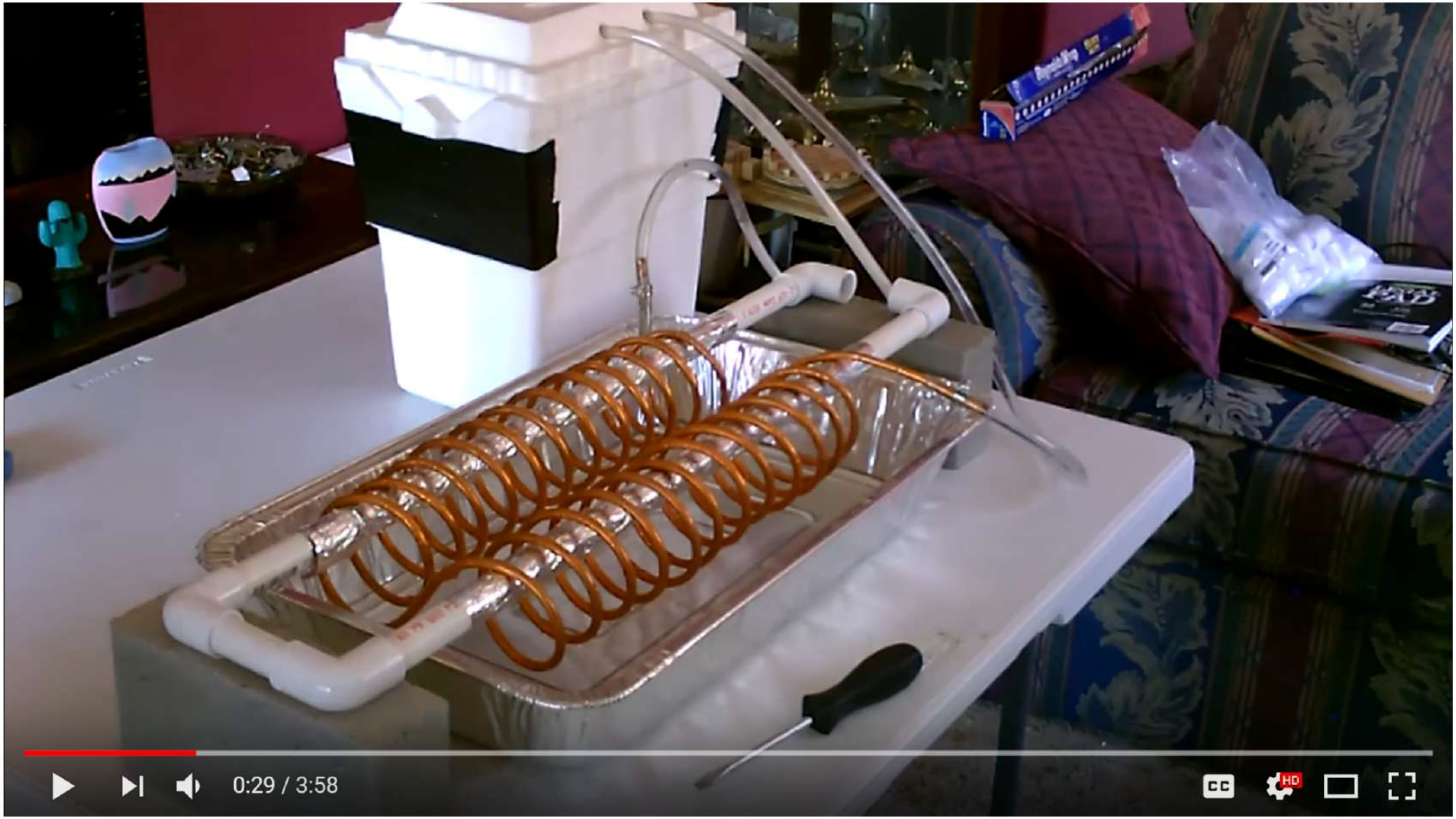
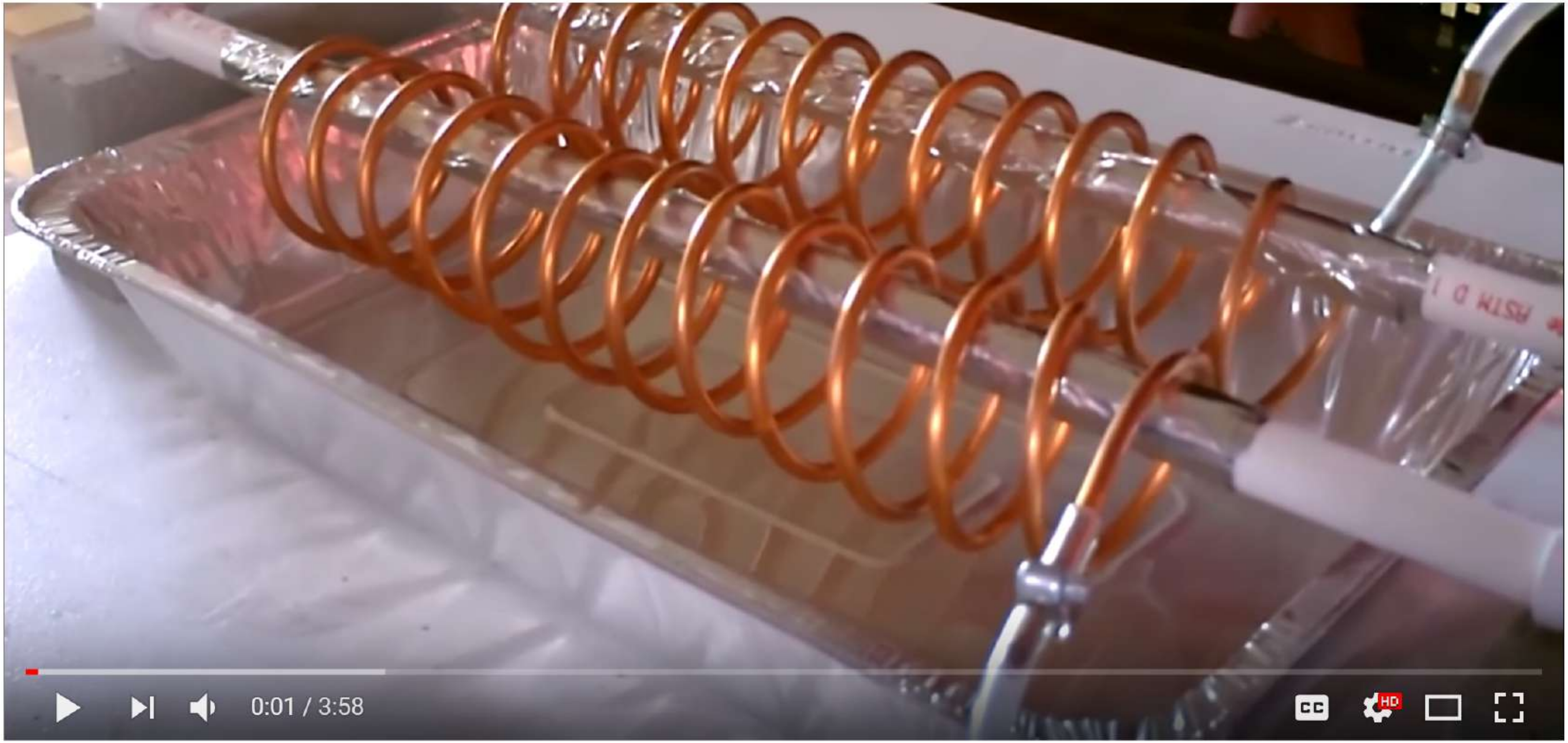
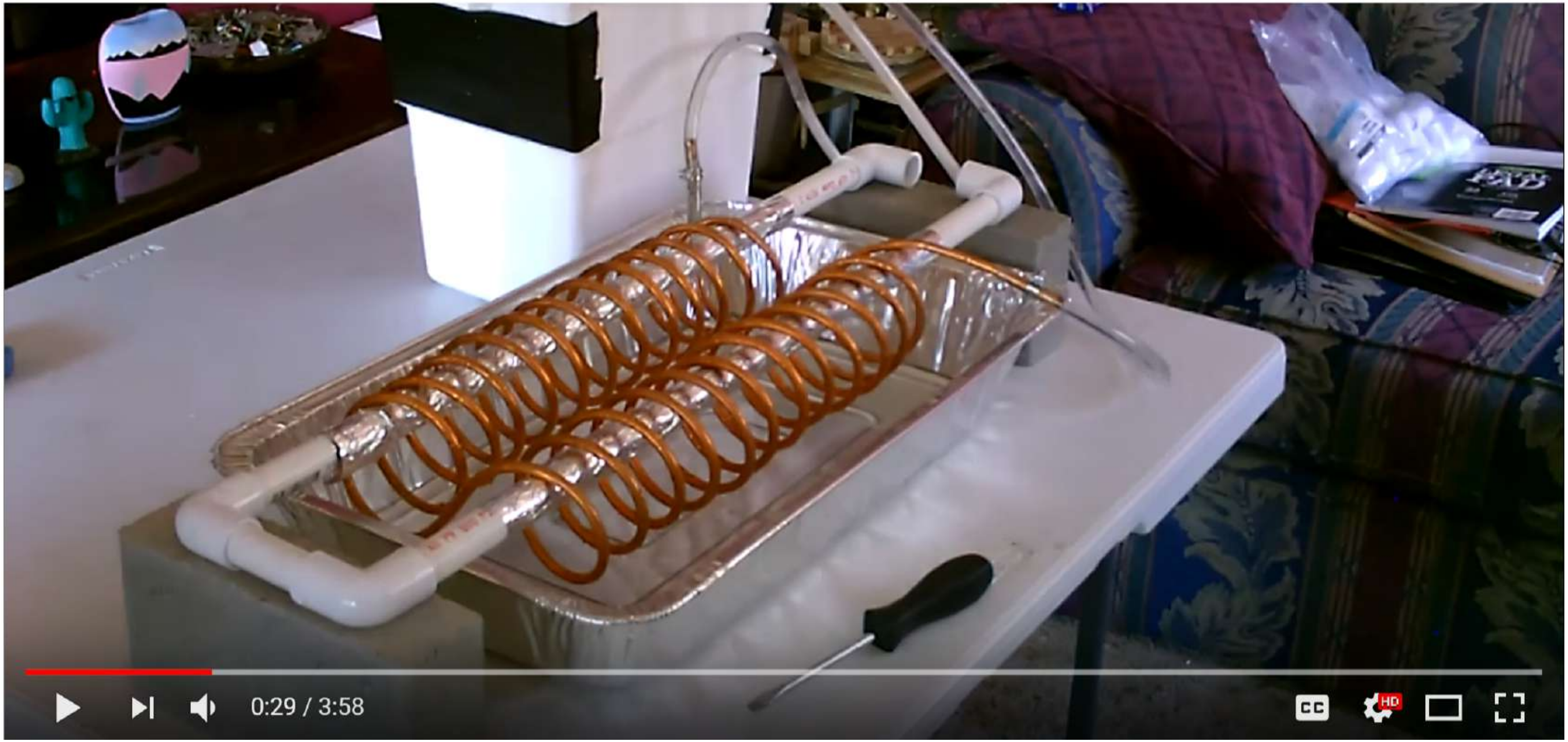


DIY Atmospheric Water Generator! - Produces/Extracts Distilled Water from the air! - DIY distiller

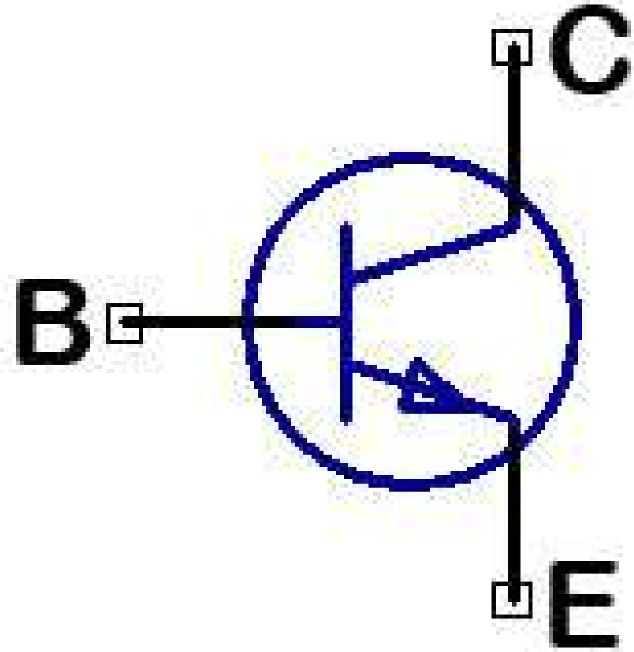

0:01 / 3:58
HD


0:23 / 3:58

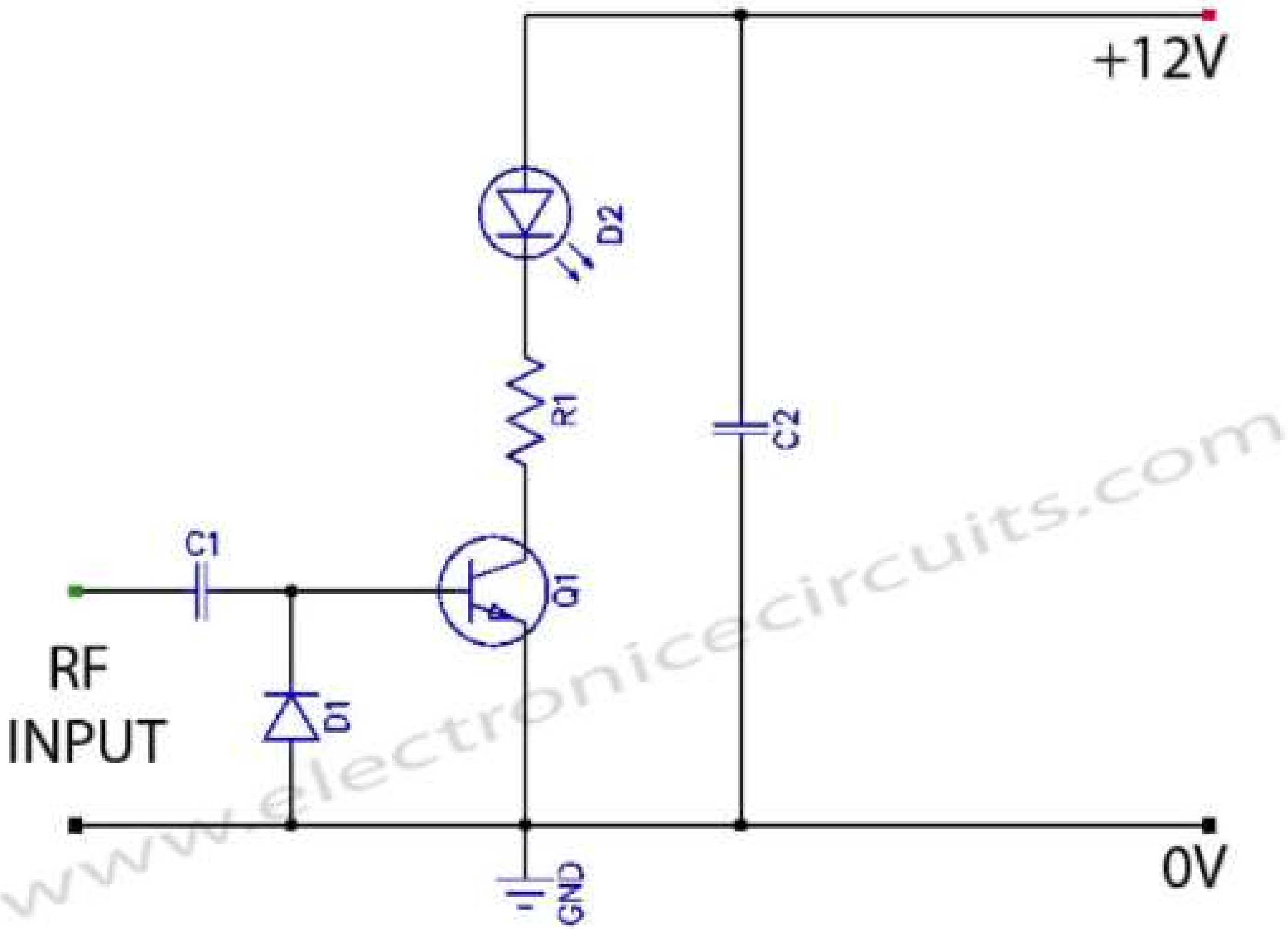

0:29 / 3:58
HD

previous next image 2 of 2 Transmitter RF Output LED Indicator Circuit close

2N3904
NPN General Purpose Amplifier



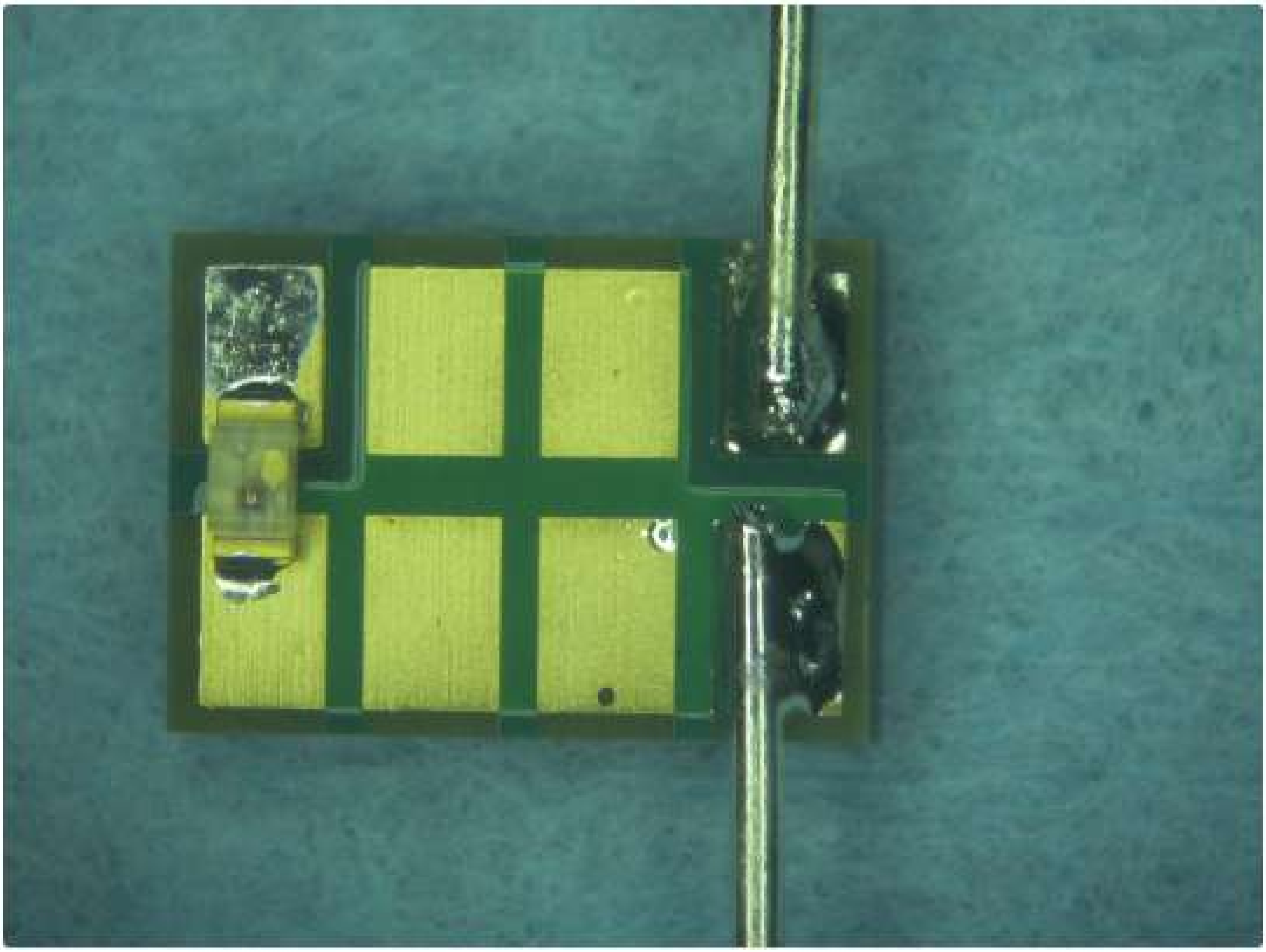
E = EMITTER
C = COLLECTOR
B = BASE



PARTS LIST	
R1	560Ω
C1	330pF
C2	0.1µF
D1	1N34 or 1N60 or ECG-109 or NET-109
D2	LED
Q1	2N3904

previous next image 1 of 2 Radio frequency LED Output Indicator Circuit close

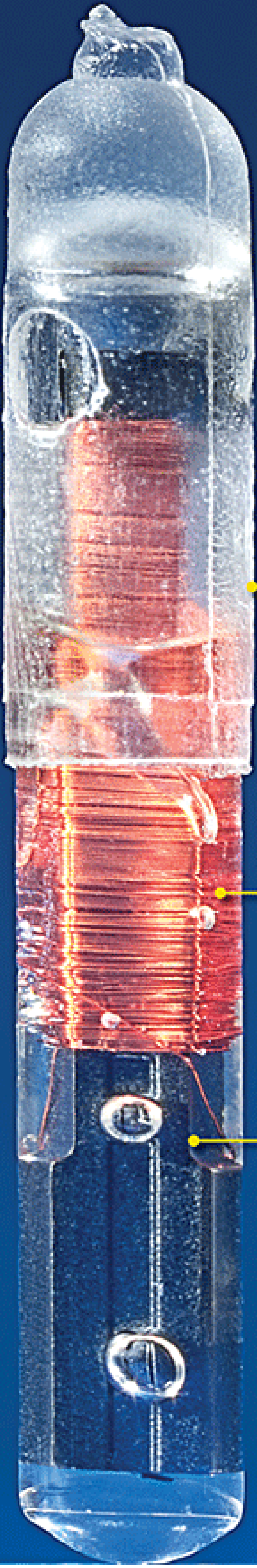
Step 1: Assembly Instructions

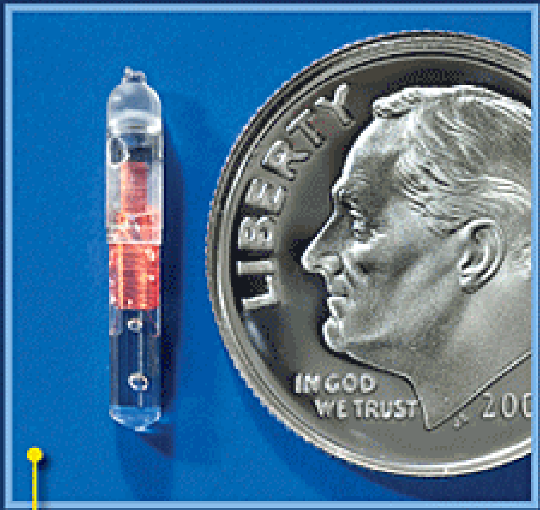


Cut the resistor wires off next to the resistor. These are just the right size at 1 1/8" long for a 2.5GHz dipole. Throw away the resistor and keep the wires.

Put solder paste on the module at pins 1 & 8 and at pins 4 and 5.Place the wires on pins 4 and 5 and solder carefully using tweezers to hold the wires (it will burn you otherwise). Solder at the lowest soldering temperature possible to avoid damaging the module. If the iron is too hot then you may damage the internal connections inside the module. Use a minimum of time for soldering (<10secs). The wires work as a dipole antenna to collect the 2.5GHz energy into the RF (Radio Frequency) Input of the module.

Place the LED with the anode (positive side) onto pin 1 and the cathode (negative side) on pin 8 and solder carefully. For those not familiar with LEDs, the triangle symbol of the diode should point to the ground pin of the module (pin 8). Your final microwave harvester should look like figure 2





SIZE The device is 11 millimeters long and about 1 mm in diameter, comparable to a grain of rice.

TISSUE-BONDING CAP
A cap made from a special plastic covers a hermetically sealed glass capsule containing the RFID circuitry. The plastic is designed to bond with human tissue and prevent the capsule from moving around once it has been implanted.

ANTENNA The coils of the antenna turn the reader's varying magnetic field into current to power the chip. The coil is coupled to a capacitor to form a circuit that resonates at 134 kilohertz.

ID CHIP The chip modulates the amplitude of the current going through the antenna to continuously repeat a 128-bit signal. The bits are represented by a change in amplitude—low to high or high to low. An analysis by Jonathan Westhues, of Cambridge, Mass., indicated that only 32 of the bits varied between any two VeriChips. The rest of the bits probably tell the reader when the loop starts and may also contain some error-checking or correction data.

Materials:

1. Fluorescent Lamp Protector Sleeve – used to make the two Leyden jars.
2. Staircase Balusters – these will be the supports for the rotating disks.
3. 1/8" Bronze Brazing Rod – will be used to fabricate all of the conductors. If you can't find this at your local hardware store look for a welding supply shop, they are sold by the pound and are incredibly useful for many things even if you don't own an oxyacetylene torch.
4. Fiberglass Driveway Marker Rod – Make sure it's round and 5/16" in diameter; these will be the shafts and insulated supports.
5. 3/8" OD Thin Wall Brass Tubing – one 3' section.
6. Knick-Knack Shelf Kit – approximately 24" by 6". You can use any ¾" board you desire, the shelf included has a nice rail that will add to the overall look of the project.
7. Inline Skate Replacement Wheels – Quantity 2.
8. Lamp Parts – You will need a selection of lamp parts which may vary depending on what is available at your particular store. Pictured here are pull chains, finials, and ball nuts used to make parts of the charge collector combs and discharge electrodes. Also pictured are cabinet knobs which were not used in this project but would make good alternatives. See the charge collector construction step for details.
9. 1" Copper Pipe Hangers – These you'll find in the plumbing section, they are copper plated steel.
10. Solder wick (not pictured) – for the neutralizing brushes, you might have to visit Radio Shack for this.
11. Rubber feet – Quantity 6.
12. Clothes Line Pulleys – must be plastic.
13. 3/16" Acrylic Glazing – enough to cut (2) 14" circles from. Polycarbonate will work too and is easier to work with but costs more than twice as much.
14. Aluminum tape (not pictured) – found with the duct tape and HVAC supplies, get the kind with the peel off paper backing.
15. Rubber O-ring belts (not pictured) – available from McMaster-Carr, part number: 94115K259 about $15 for a package of eight.

The total cost of purchasing the materials new is about $100. However, these are all relatively common items

Disks and Drive Components:

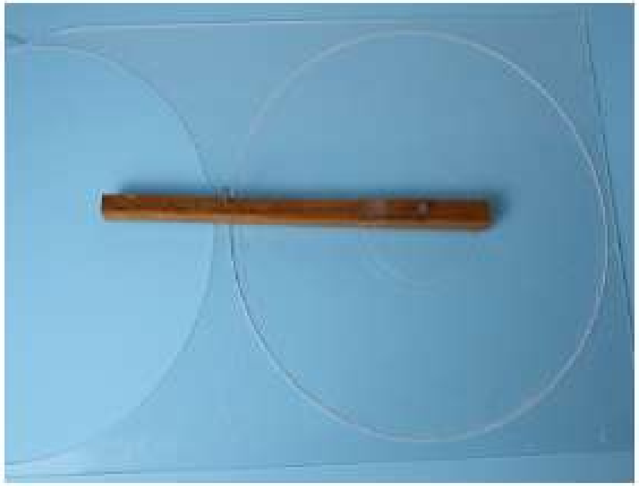
wimshurst-circle-cutter-inset.jpg

Make the cutting tool:

1. To cut the two 14" acrylic circles we will first need to make a tool. Cut a 12" length of wood ¾" square. Pine will work but hardwood is preferable.
2. Drill a pilot hole near one end and press or drive a #6 penny nail through the stick so the point sticks out about ¼".
3. Drill a second hole exactly 7" from the first and insert another #6 penny nail into it.
4. Use a fine metalworking file to shape the point of the second nail as shown. You want to make a chisel point with a slight undercut on the leading face.

Cut the acrylic disks:

1. Lay out your circles with a compass to be sure they will both fit on your sheet of acrylic.
2. Drill a 1/8″ hole in the center of your circle. Be gentle when drilling acrylic, it cracks easily. Polycarbonate is quite a bit tougher.
3. Working on a carpeted floor, insert the unmodified nail in the center and begin scoring your circle. Cut about a quarter of the way with each stroke and work your way around the circumference.
4. If the cutter sticks, lift it out and move to a different spot.
5. When you think you've gone about halfway through, flip the acrylic sheet over and cut from the other side. You may end up flipping the sheet several times before the circle pops free.
6. Clean up the edge of the circle with some 400 grit sand paper and set them aside.



wimshurst-circle-cutter.jpg

Cut belt grooves in the skate wheels:

wimshurst-skate-wheel-groove.jpg

1. Gently clamp or strap your drill to a workbench as pictured.
2. Assemble a mandrel from a 5/16" bolt and some large (fender) washers, when assembled the entire wheel must spin, not just the bearings.
3. Chuck the assembly into the drill. The wheel should turn toward you and the speed should be fairly fast.
4. With a crosscut bastard file make a ¼" wide flat on the wheel and then switch to a rat-tail file to cut the grove. Apply light and even pressure to the file.

Attach the skate wheels to the disks:

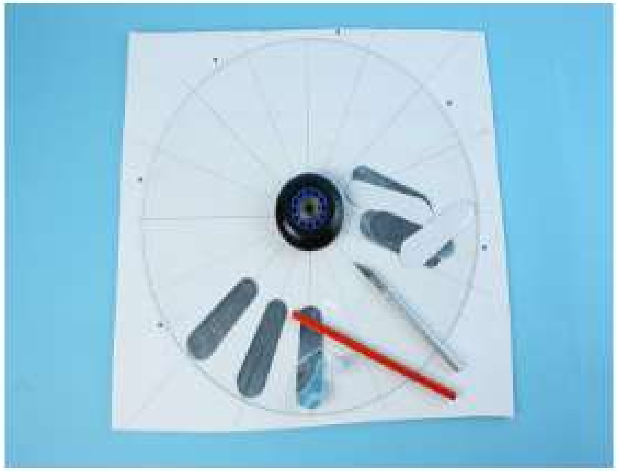
wimshurst-skate-wheel-mount.jpg

1. Use a step drill bit like the one pictured to increase the size of the hole in the acrylic disk to 5/16". Remember, be gentle and go slowly because acrylic is easily cracked.
2. Remove the washers from the wheel and use the 5/16" bolt to center the wheel against the disk.
3. Drill (4) 1/8" holes through the disk, don't drill into the wheel.
4. Switch to a 3/32" bit and drill partway into the wheel in 4 places.
5. Finish the holes with a counter sink.
6. Now remove the 5/16" bolt and drill the center hole out to ½" or 5/8" using a step drill, you want the edges of the hole completely clear of the rotating parts of the wheel bearing.
7. Install (4) small counter sunken screws, tighten these so they *just* touch the disk, the disk must remain as flat as possible.

Cut the sectors:

wimshurst-sector-cutting.jpg

1. Decide how many sectors you are willing to cut. I'm rather lazy and opted for fewer sectors, 16 per disk. If you decide to make 24 or even 32 sectors you'll have to make them smaller but you will be rewarded with longer sparks.
2. The sectors are cut from aluminum tape. Make a template from a piece of plastic milk jug and trace each sector. Cut them individually, don't be tempted to stack multiple layers of tape; the cut will end up ragged and will bleed charge away into the air.
3. Tip: I found it easiest to use an X-acto knife and straight edge to cut the long sides and then switch to scissors for the curved ends.



wimshurst-affix-sectors.jpg

Attach the sectors:

1. Lay out a circle on a piece of foam board.
2. Draw radial lines to correspond with the number of sectors you've chosen
3. Place your template centered at 6 o'clock and trace it. The large end should face out and be about ¼" from the edge of the disk.
4. Set the disk on the foam board and insert push pins around the circumference so it turns in place.
5. Carefully peel and stick the sector in place. It's a good idea to make some extra sectors and practice this operation first. A length of fiberglass rod makes an excellent burnishing tool.
6. Turn the disk one line to the left and repeat. Always index the line to the first sector you stuck down, this will help make the spacing as even as possible.

Prepare the drive pulleys:

wimshurst-drill-pulley.jpg

1. Remove the pulleys from their cages by drilling out the rivets.
2. Use the step drill to enlarge the holes to 5/16". Drill from one side, then the other to enlarge the full depth of the hole in the pulley. Note: The use of the step drill is especially important here because of its self-centering characteristics.
3. Cut (2) 7" lengths of fiberglass rod, slightly bevel the ends with a file to prevent chip out. Be careful of the glass fibers, they can be really irritating!
4. Drill the splines out of the window crack bore with a regular 5/16" drill bit. Clamp the crank in a vise and go slowly; making sure the bit is in line with the axis.

Cut and drill the supports:

wimshurst-drill-upright.jpg

1. Cut 12" off of each of the staircase balusters. Choose the end that you think looks best. On my prototype machine I used both ends of the same baluster and thus had two different style supports.

2. Clamp the two supports together as shown and drill 5/16" holes 3 ¼" inches from the bottom (square end) and 11" inches from the bottom.

3. The lower hole will need to be reamed out so that the fiberglass axle turns freely in it. Use a slightly larger drill or rat-tail file for that. You can also drill it larger and insert plastic bushings for smoother operation. Alternatively you can bore it out with a step drill to match the diameter of a pair of skate bearings – this works exceptionally smoothly and is what I ultimately did to my own machine.

wimshurst-screw-uprights.jpg

Attach the supports to the base:

1. Draw a line parallel to the back of the base 2 ½" in, this is not quite to the center. Draw a second line perpendicular to the first on the center of the base.

2. Cut a 1 ¼" gap in the rail on the center line, as pictured.

3. Drill (2) 3/8" inch holes through the base on the center line 5/8" from the front and back edges.

4. Use 2" drywall screws and large washers to attach the supports to the base. The combination of the large washer and 3/8" hole will allow you to adjust and align the position of the rotating disk precisely.

5. Drill (2) 5/16" holes on the line parallel to the long dimension and 7 5/8" from the centerline on each side – these holes need to be straight up and down so drill carefully, use a small carpenter's square to line up the drill.

Charge Combs and Neutralizing Bars:

wimshurst-solder-balls.jpg

Prepare the charge collectors:

1. Use a hacksaw to cut off the nail ends of the pipe hanger. The overall length should be 5".

2. You'll find small brass ball cap nuts in the electrical section at the hardware store; they are most commonly used to secure the top of brass outdoor lighting fixtures.

3. Place the small brass ball nuts on the ends of the hanger, heat them with a small torch and apply just enough solder to fill the joint. Note: Be careful not to overheat the pipe hanger, it is copper plated steel and it you heat it too much the solder may not adhere.

The torch pictured is a Lenk LSP-180 butane torch/soldering iron and it is a marvelous tool.

Attach the collector comb prongs:

wimshurst-prongs-progression2.jpg

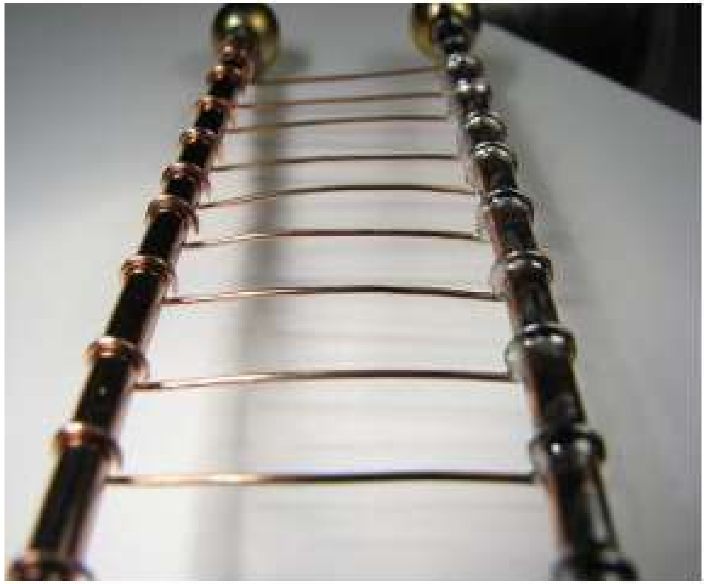
1. You need to make 8–12 pointy prongs down each side of the collector comb. I stripped the conductors out of a 3' section of telephone wire to make them.

2. Wrap the copper wire around the pipe hanger as shown in the left-most example. I made 11 turns.

3. Cut away the center portion of the wire on one side only and bend the cut ends around the pipe hangers.

4. Spread the prongs out evenly along the portion of the charge collector that will be opposite the sector.

Solder the prongs:



wimshurst-solder-prongs.jpg

1. Crimp the ends tightly around the pipe hanger.

2. Use a large soldering iron to solder each joint. Apply sufficient solder so that when you take the soldering iron away solder flows down to fill the gap at the end of each length of wire. We want to avoid any points other then the prongs themselves.

3. Once you've soldered all of the joints cut down the center of the wires but don't trim them to length until it's time to install the combs.

Charge collector mount:

wimshurst-collector-assembly.jpg

I made a couple of different collector mounts using various lamp parts and cabinet knobs. This was the simplest, but you may have to improvise if you can't find these particular lamp parts at your local hardware store.

Pictured here right to left:

- 3/8" OD thin wall brass tubing 6" long
- 3/8" threaded collar
- 3/8" lamp "nipple" 1" long
- Lamp washer nut (threaded)
- Rubber flat washer
- 3/8" brass washer
- 3/8" threaded lamp finial
- #8-32 screw

Prepare the collector mount:

1. Using the step drill, bore out one half of the threaded collar.

2. Screw the nipple halfway into the collar and insert the brass tubing into the opposite end and solder it in place.

3. Drill one hole straight down into the top of the finial and thread with a #6-32 tap. Use the drill size written on the tap.

4. Drill a 1/8" hole through the body of the finial as pictured, this is for the discharge electrode.

5. Cut a ½" length from the extra you trimmed off of the pipe hanger earlier and solder it to the brass washer, this will allow the assembly to clamp and hold the charge collector perpendicular to the support.

6. Test assemble the mount and then disassemble and set aside.

wimshurst-discharge-assembly.jpg

Prepare the discharge electrodes:

1. Cut two 15" lengths of brazing rod and bend them as shown. I bent mine by hand but you could bend a 30" length around a five gallon pail and then cut it in the center for a neater appearance.

2. The balls for the discharge electrodes come from some more lamp finials, cut them off just below the ball with a hacksaw. These balls are about ½" in diameter.

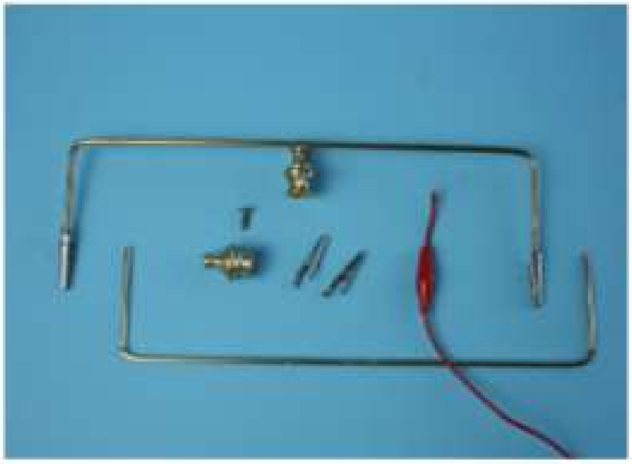
wimshurst-discharge-ball-cut.jpg

3. Solder the discharge balls to the electrodes; fill the hole with solder so it makes a smooth transition to the rod.

wimshurst-discharge-ball-solder-prep.jpg

Note: do not solder the small ball nuts in place!

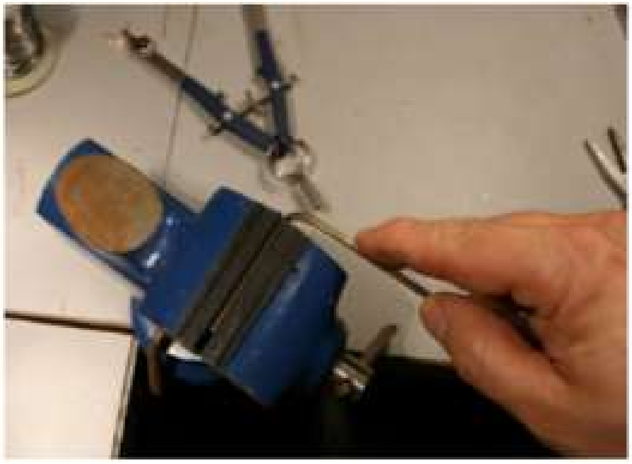
Fabricate the neutralizing brushes:



wimshurst-neutralizer-bar-parts.jpg

The neutralizing brushes are made with more brazing rod, alligator clips salvaged from a pair of clip-leads, and yet another type of lamp finial.

Bend the brush support:



wimshurst-neutralizer-bend.jpg

1. Cut a length of brazing rod 14" long and mark it 2" from either end.
2. Make (2) 90 degree bends in the rod at the 2" marks.

wimshurst-neutralizer-hub.jpg

Solder the brush support to the brush boss:

1. Drill a hole for a set screw in the base of the finial and tap with the #6-32 tap.

2. File a groove in the top of the lamp finials, these particular finals have a 3/8" threaded hole in the bottom and a small hole in the top. I think they are made for ceiling fixtures that have a center pull string.

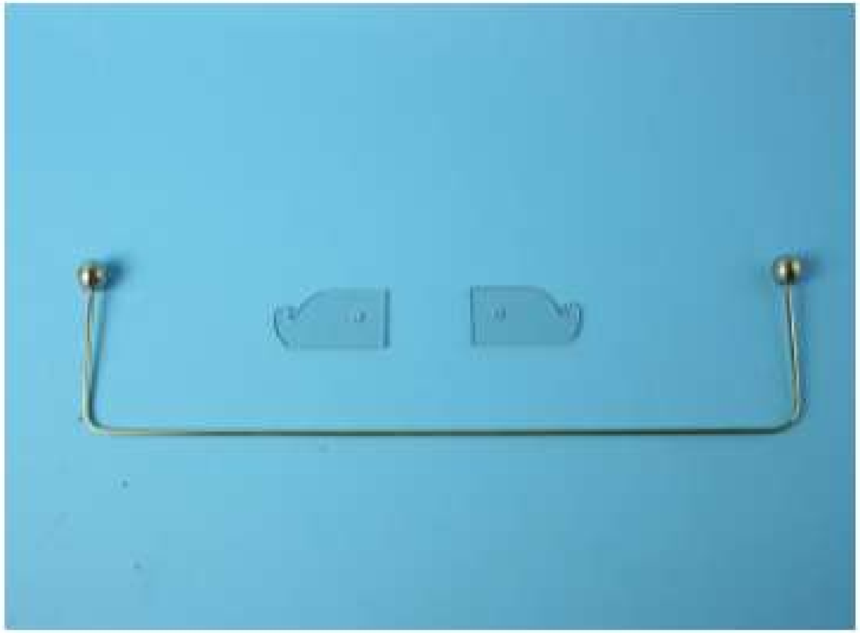
3. Center the neutralizer bar on the finial and prop it so its parallel to the workbench top and solder it in place.

Attach the brush clips to the support:

wimshurst-neutralizer-clip.jpg

1. Crimp the alligator clips on to the ends of the neutralizer bar and solder.

Fabricate the Leyden jar shunt:



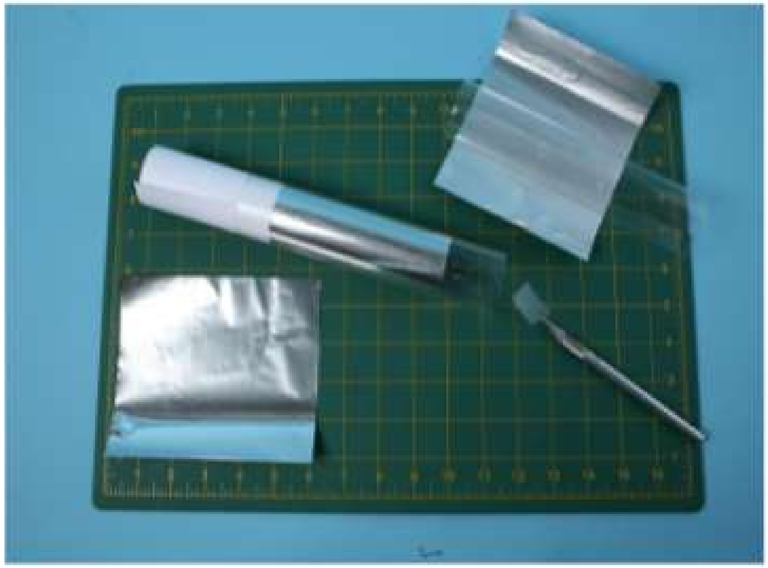
wimshurst-layden-shunt.jpg

1. Cut a 22" length of brazing rod.
2. Make 90-degree bends, 3 ½" in from each end.
3. Solder two brass balls to the end. These are the large brass lamp chain pull balls, smaller finial balls or cabinet knobs would work here, too. If you use knobs be sure to remove any lacquer finish.

Cut the Leyden jar body:

wimshurst-layden-cut-tube.jpg

1. Using the miter box and fine tooth hacksaw, cut two 7 1/2" lengths from the fluorescent lamp protector sleeve.

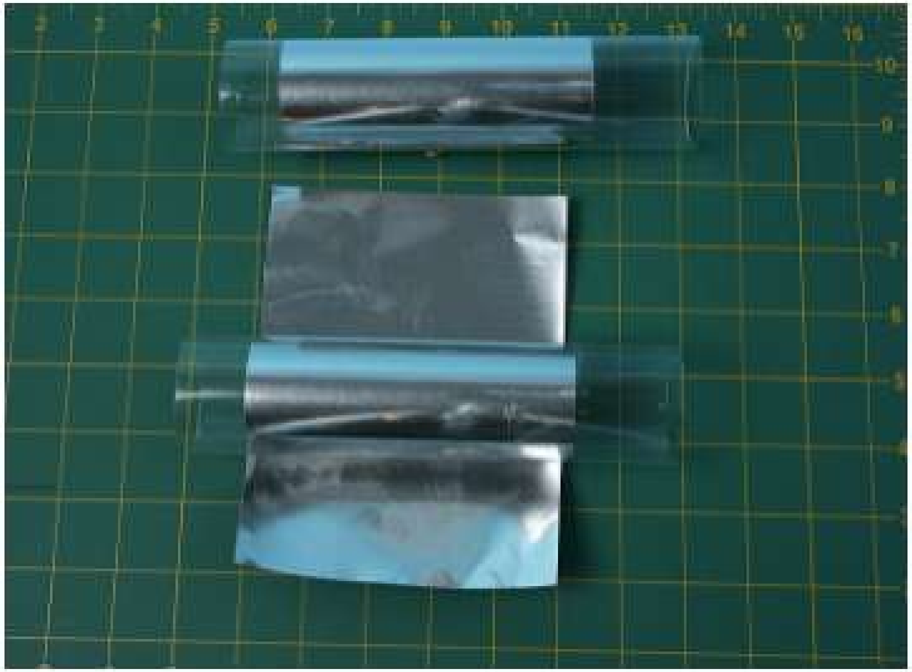


wimshurst-layden-plate-inner.jpg

Cut and affix the inner plate:

1. Cut (4) 5" by 6" sheets of heavy duty aluminum foil.
2. Form one sheet by wrapping it around the tube and then rolling it so it can be inserted. Roll along the 6" axis so the foil cylinder ends up being 5" high.
3. Insert the foil into the tube so that it is 1" from one end. Use a couple of rolled up sheets of paper to hold the foil firmly against the inside of the tube while you tape it in place. The tighter you can make it to the inside of the tube the better.

Affix the outer plate:



wimshurst-layden-plate-outer.jpg

1. Wrap another piece of aluminum foil around the outside and tape it in place. Again, the tighter the better, but don't wrinkle the foil.

Make the bases:

wimshurst-layden-plate-bottom.jpg

1. Snap the tube ends onto the opening that is 1" from the foil

2. Make the Leyden jar bases from a pair of plastic closet pole mounts. Drill out the center hole to 5/16".

Note: These are Stanley brand and I had to trim some reinforcing ribs off with an X-acto knife to make them slide into the tubes.

wimshurst-axle-collars.jpg

Mount the disks and drive line:

1. Slide the disk axle into a support and put on a 5/16" set screw collar, an O-ring belt, the two disks, the other belt, and another collar.

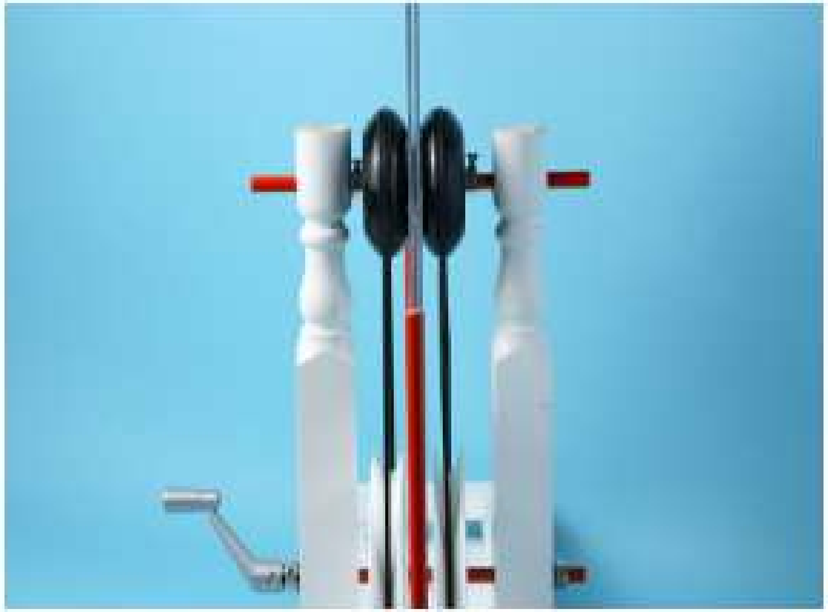
2. Attach the casement window crank to the drive shaft, insert the bushings in the supports if you are using them and slide the shaft through the pulleys. The pulleys should be a tight fit and you will have to twist the shaft back and forth to get it through. Don't forget about the belts hanging from the top shaft, one will need a twist so that the disks rotate in opposite directions. A collar goes on either end of the drive shaft.

3. Once both shafts are in place, stretch the belt around the pulleys. (In the picture, the belt with the twist is hidden behind the disk. What you are seeing is a reflection of the untwisted belt.)

Note: 5/16" set screw collars can be found at the hardware store but I made my own by drilling out a 5/16" nut and threading a #6-32 screw into the side.

Note: I found that my machine became difficult to turn once it was fully charged due to the electrostatic attraction of the disks. I cut a 2 ½" washer from a plastic milk jug and placed it on the shaft between the disks to remedy this problem.

Align the disk and collector supports:



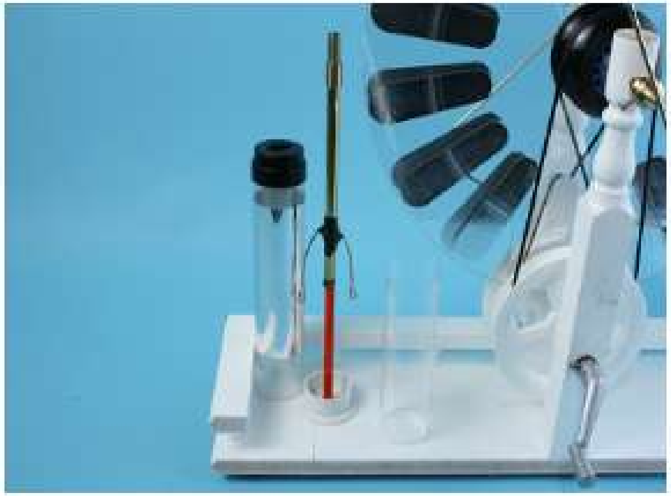
wimshurst-lineup-collectors.jpg

1. Cut two 11" lengths of fiberglass rod and press them into the holes made earlier in the base.

2. Loosen the screws that hold the two supports to the base and slide them around to adjust the disks so they line up with the charge collector supports.

3. Re-tighten the supports.

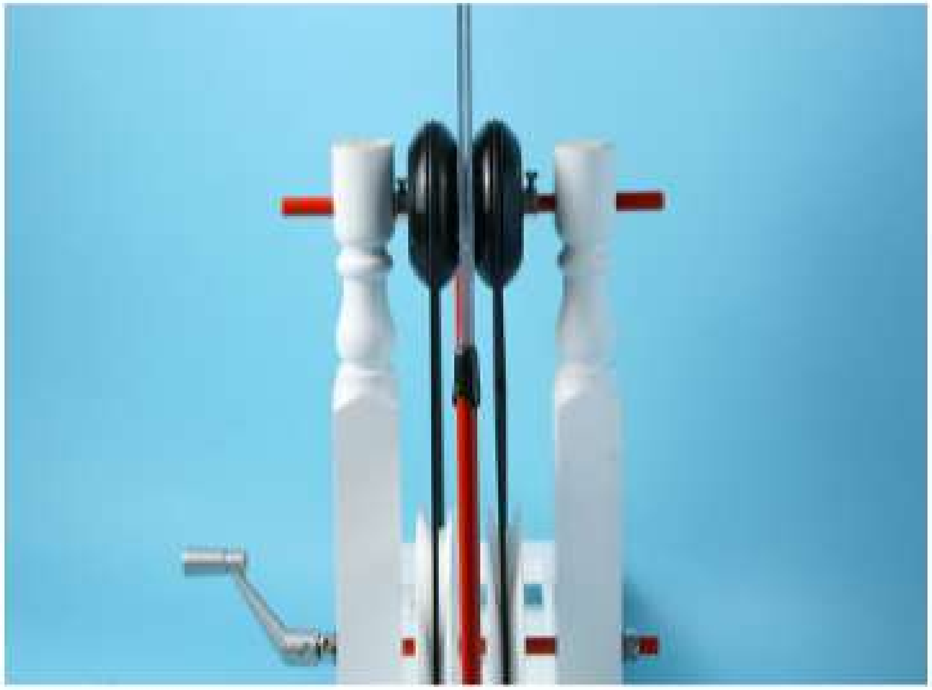
Install the Leyden jar base and inner plate contact:



wimshurst-layden-contact-inner.jpg

1. Slide the Leyden jar bases onto the fiberglass charge collector supports.
2. Slide the charge collector assembly over the fiberglass supports.
3. Using about 6" of 14 AWG solid copper wire, form the inner plate contact. Wrap it once around the brass tube and form two loops in the ends.
4. Using a scrap of the plastic tube as a guide, adjust the inner plate contacts so they apply even and gentle pressure. You want good contact with the foil but you don't want to rip the foil when you install the Leyden jars.

Epoxy the charge collector assembly in place:



wimshurst-collector-epoxy.jpg

1. Apply epoxy to the end of the rod and slide the brass charge collector assembly down onto the fiber glass support rod.

2. Set aside while the epoxy cures.

Install Leyden jar and assemble collector:

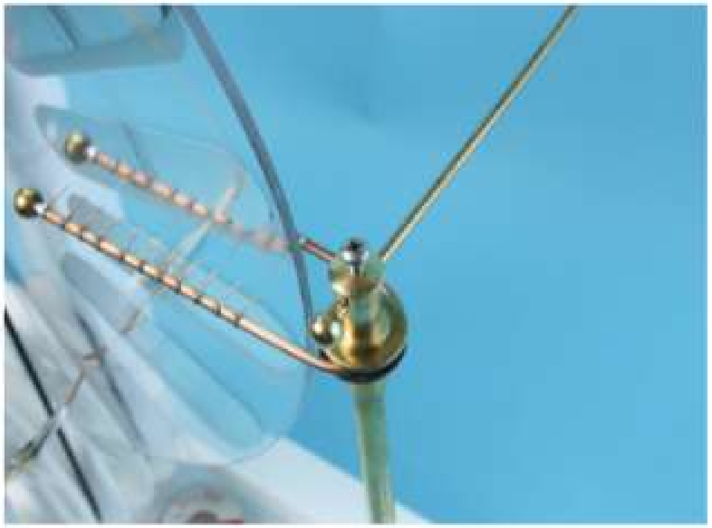
wimshurst-layden-complete.jpg

1. Slide the Leyden jar onto its base, being careful not to tear the foil as makes contact.

2. Line up the charge collector comb and trim the prongs. Test spin the disks to see if there is any wobble and trim the prongs to come as close as possible to the disks without touching.

3. Assemble the charge collectors.

Install discharge electrode:



wimshurst-collector-inplace-2.jpg

1. Insert the discharge electrodes into the lamp finial on the charge collector and tighten the screw to hold it in place.

2. The finial should be tight enough to hold the collector comb but allow the discharge electrode to move back and forth. If it's too tight, or not tight enough, the support rod can be twisted in the base to accommodate.

3. Wrap a small bit of tape around the end of the electrode and screw on one of the small ball nuts; this will prevent charge from bleeding off the sharp end.

Install neutralizing brushes:

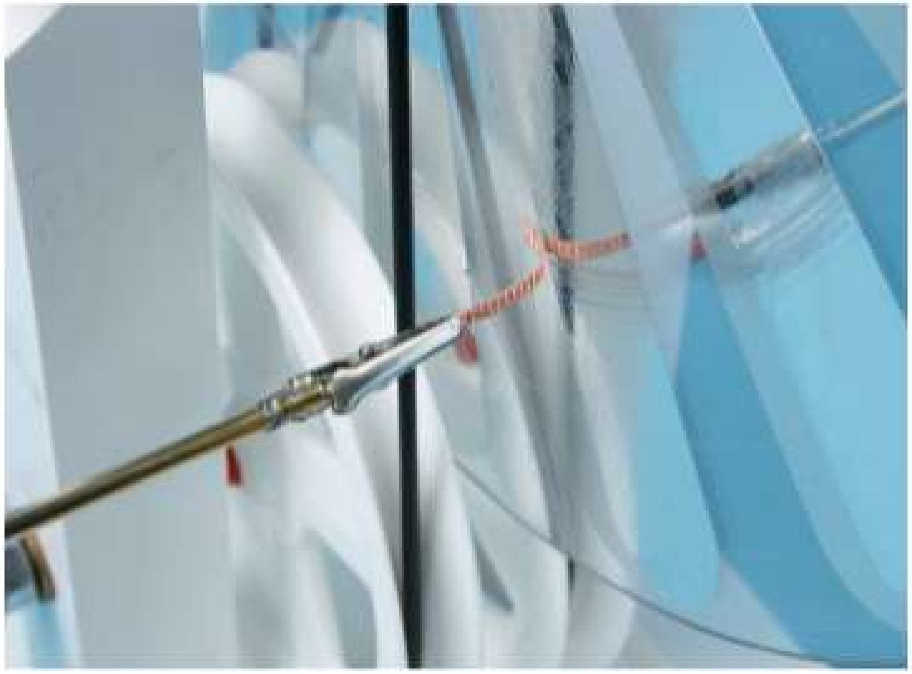
wimshurst-neutralizer.jpg

1. Slide the neutralizing bars onto the upper shaft and adjust them to be about 45 degrees from the collector combs.

2. Sectors should pass through a charge collector, encounter a neutralizing bar after about 1/6 of a rotation, and then encounter the other charge collector after a further 1/3 of a rotation.

3. Tighten the set screw to secure.

Position brushes:



wimshurst-neutralizer-brush.jpg

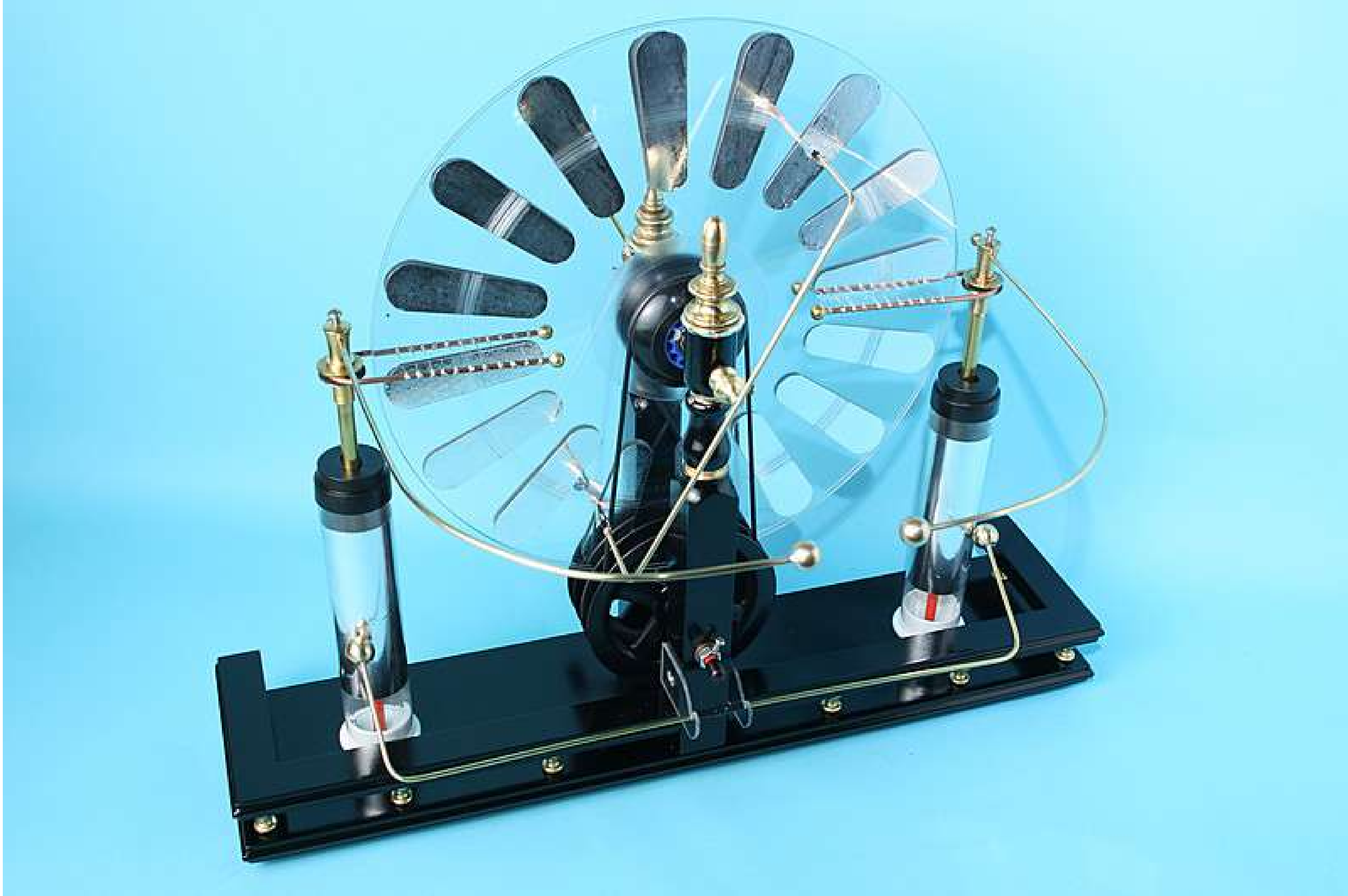
1. Clip (2) 1 ½" lengths of Solder Wick™ to the ends of the neutralizing rods so they make good contact with the disk.

Mount the Leyden jar shunt and add optional finials:

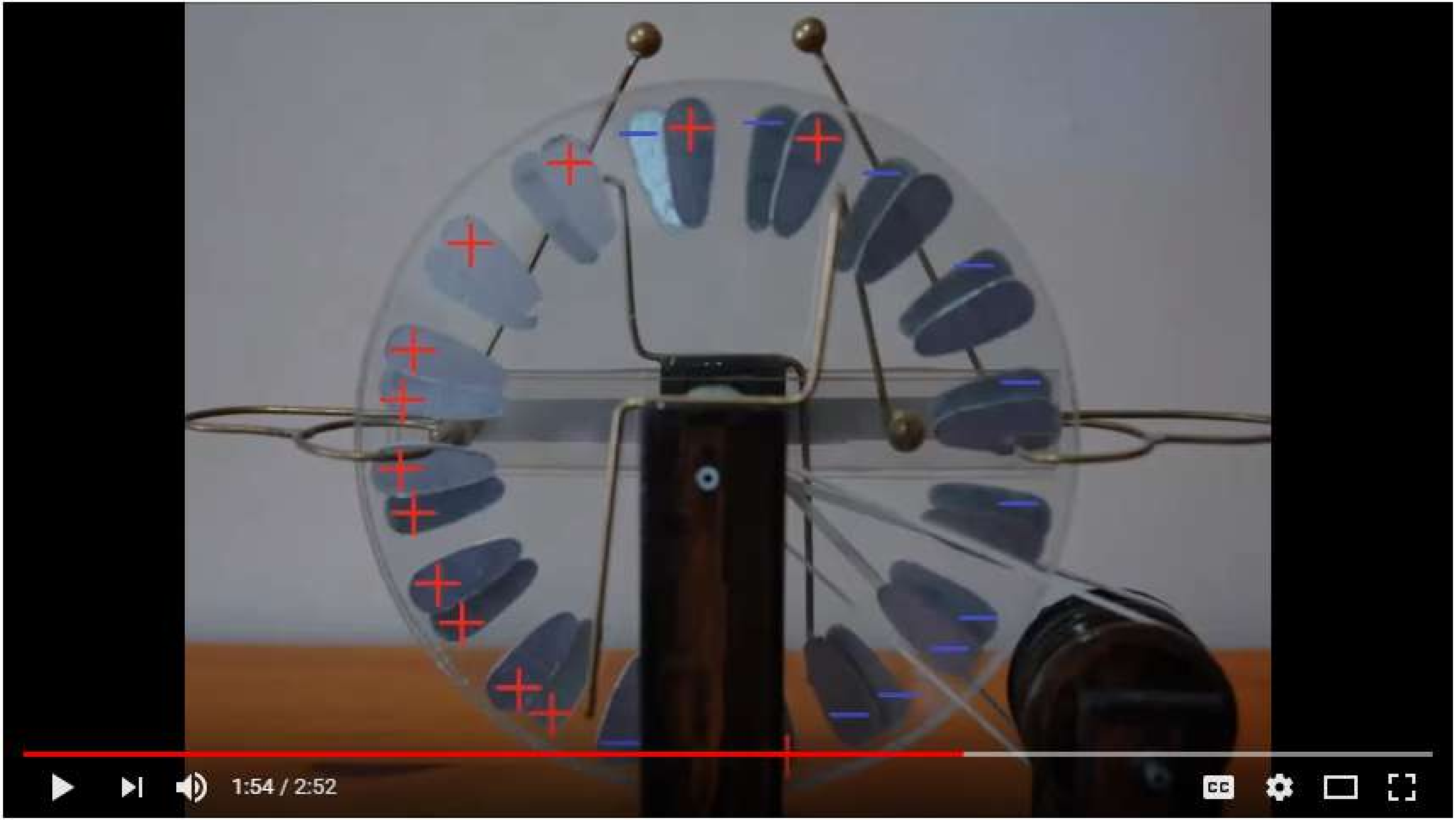
wimshurst-complete-front.jpg

1. Use small brass wood screws to attach the (2) acrylic brackets to the front disk support, leave them a little loose at first.
2. Place the Leyden jar shunt in the brackets and line them up so the balls on the shunt lean comfortable against the Leyden jars.
3. Tighten the brackets.

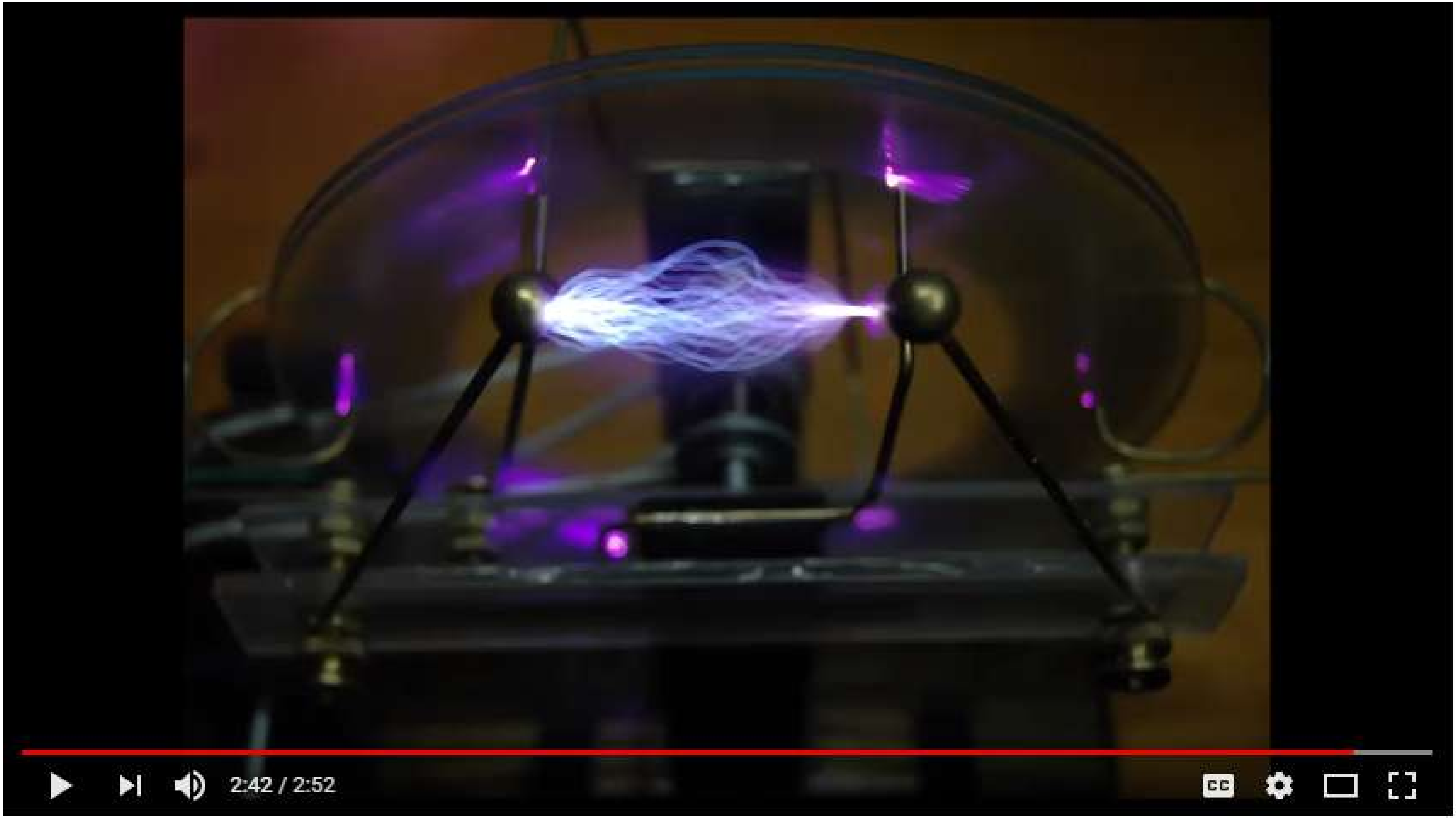
The two tops of the disk supports looked a little bare to me so I raided my junk box for more lamp parts and came up with these decorative finials. The wealth of finial and cabinet knobs at the typical home center means that there are infinite



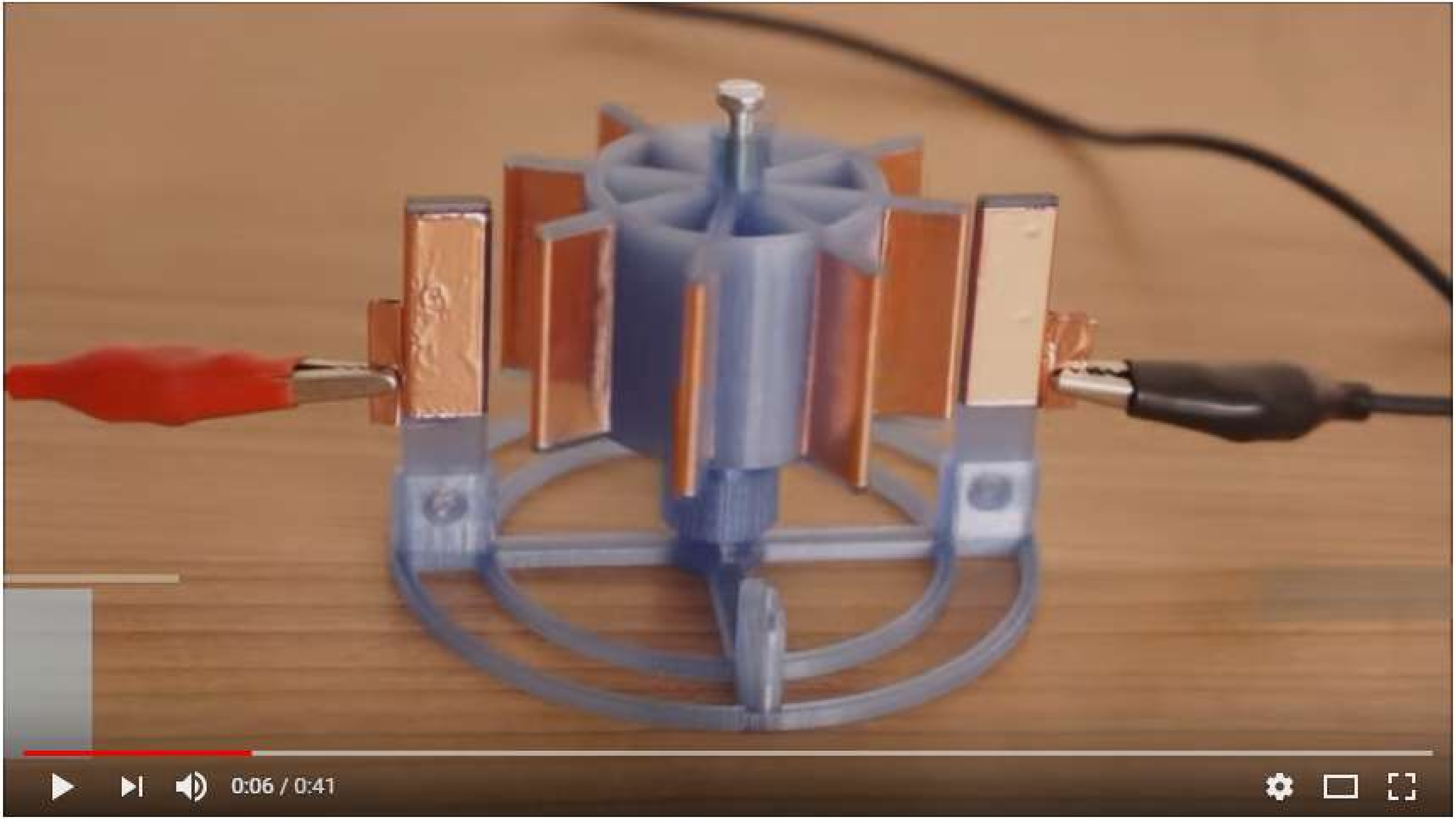
Attaching a small ball to the positive electrode will result in larger and more interesting sparks.
The small ball creates a plume of ionized air that helps the spark jump the gap.



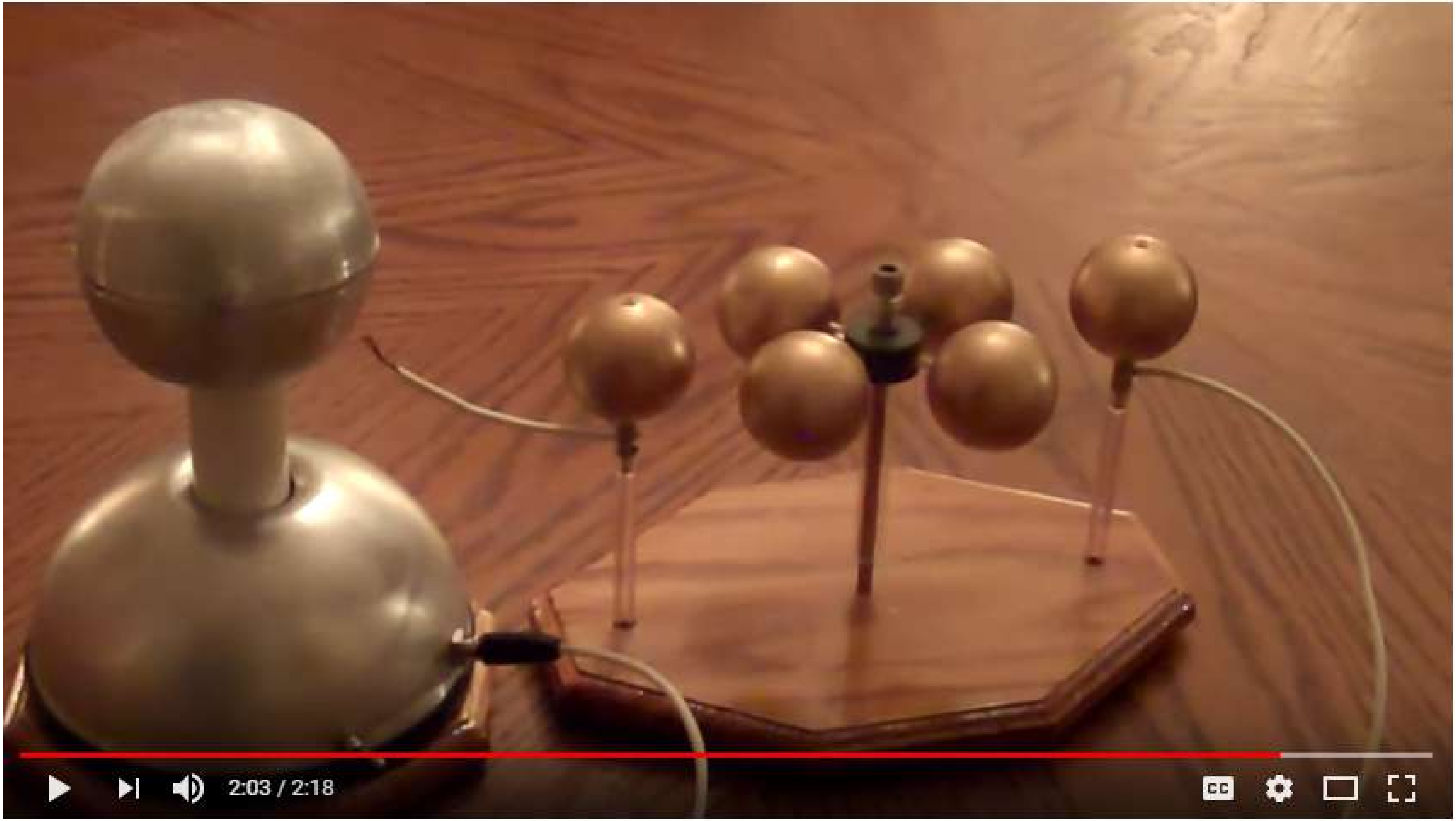
How the Wimshurst Works



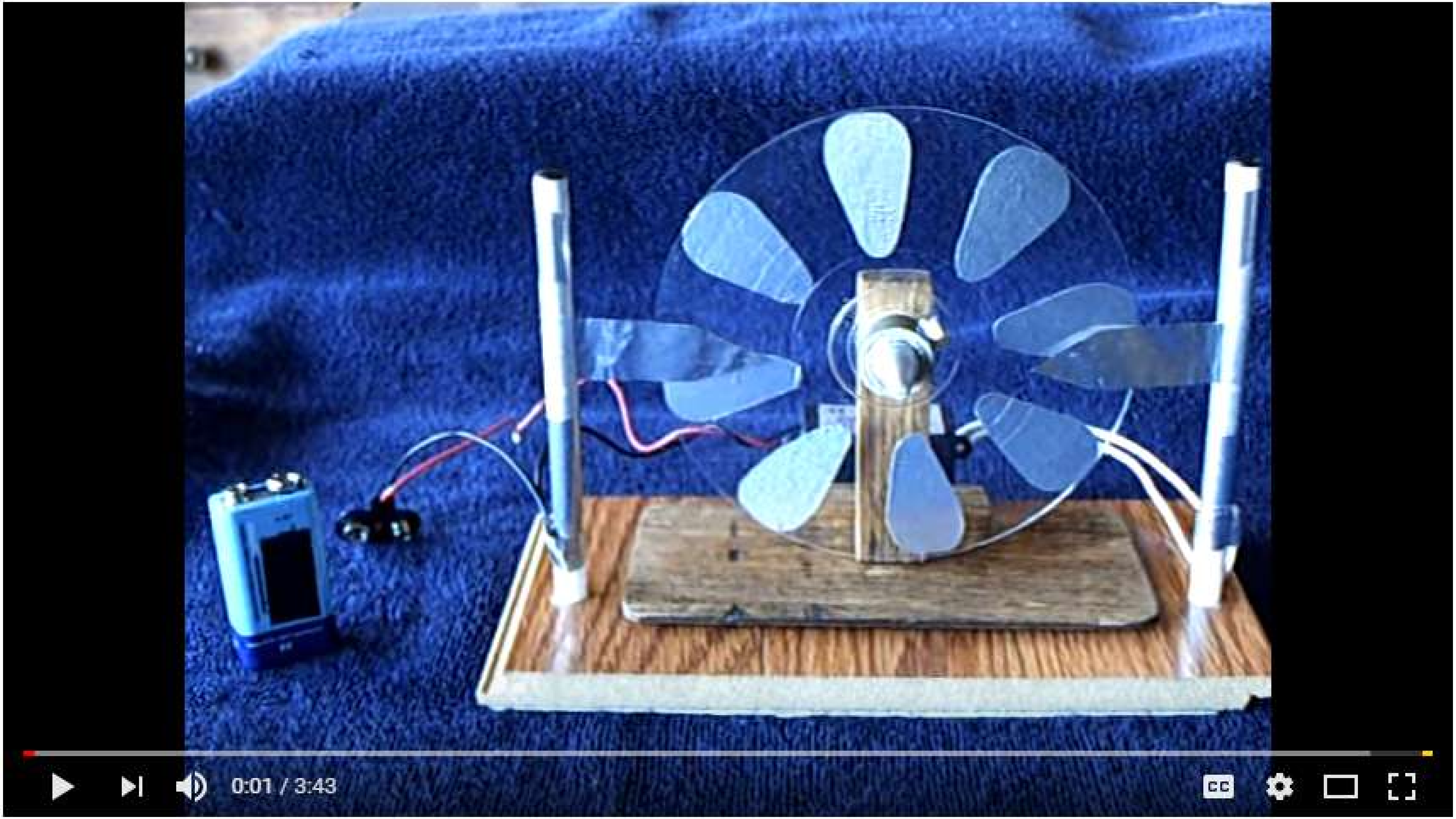
How the Wimshurst Works



Electrostatic Motor

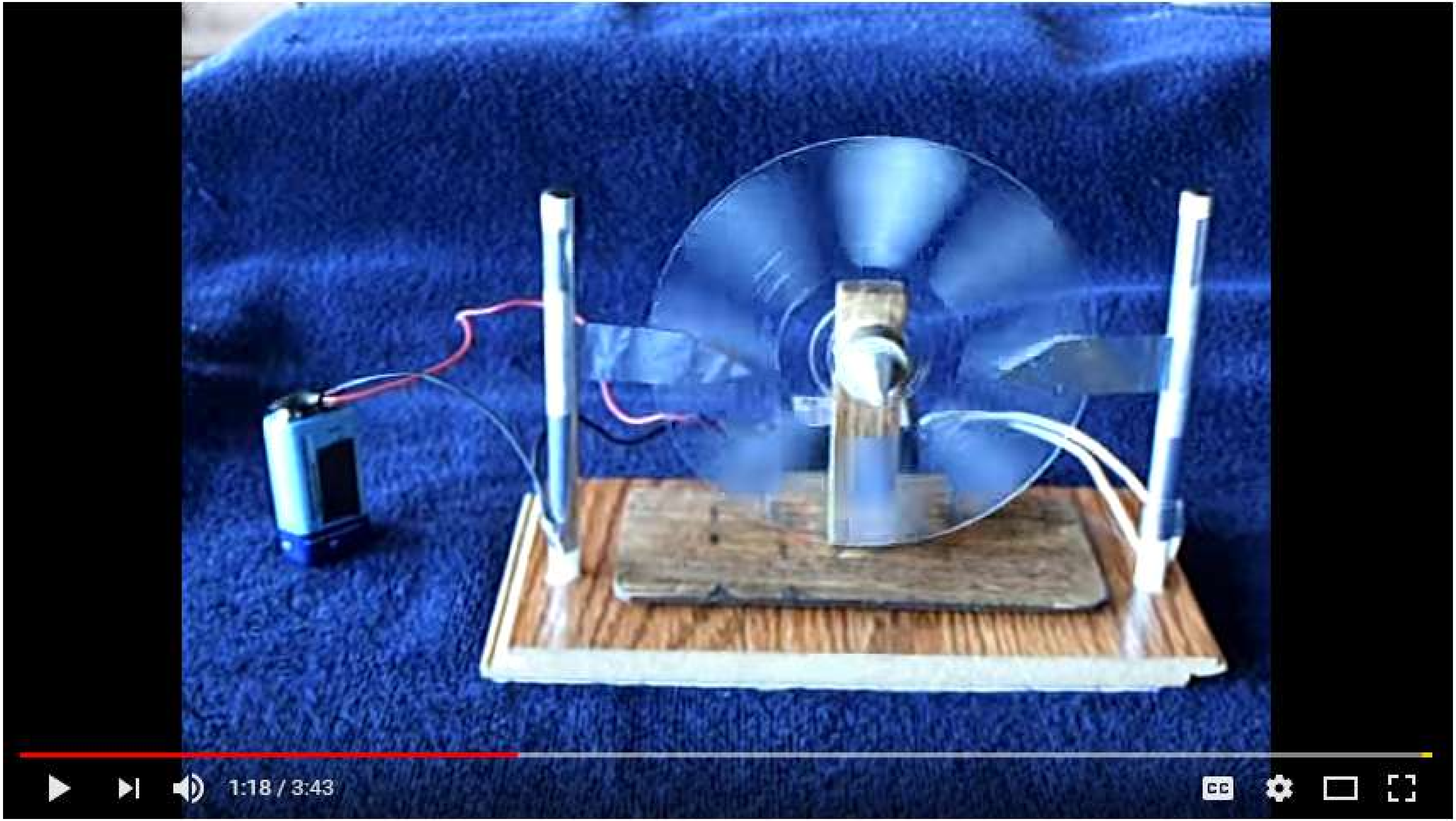


Home Made Electrostatic Motor



Clear Disk Electrostatic Motor


CE
2:57 / 3:43
CC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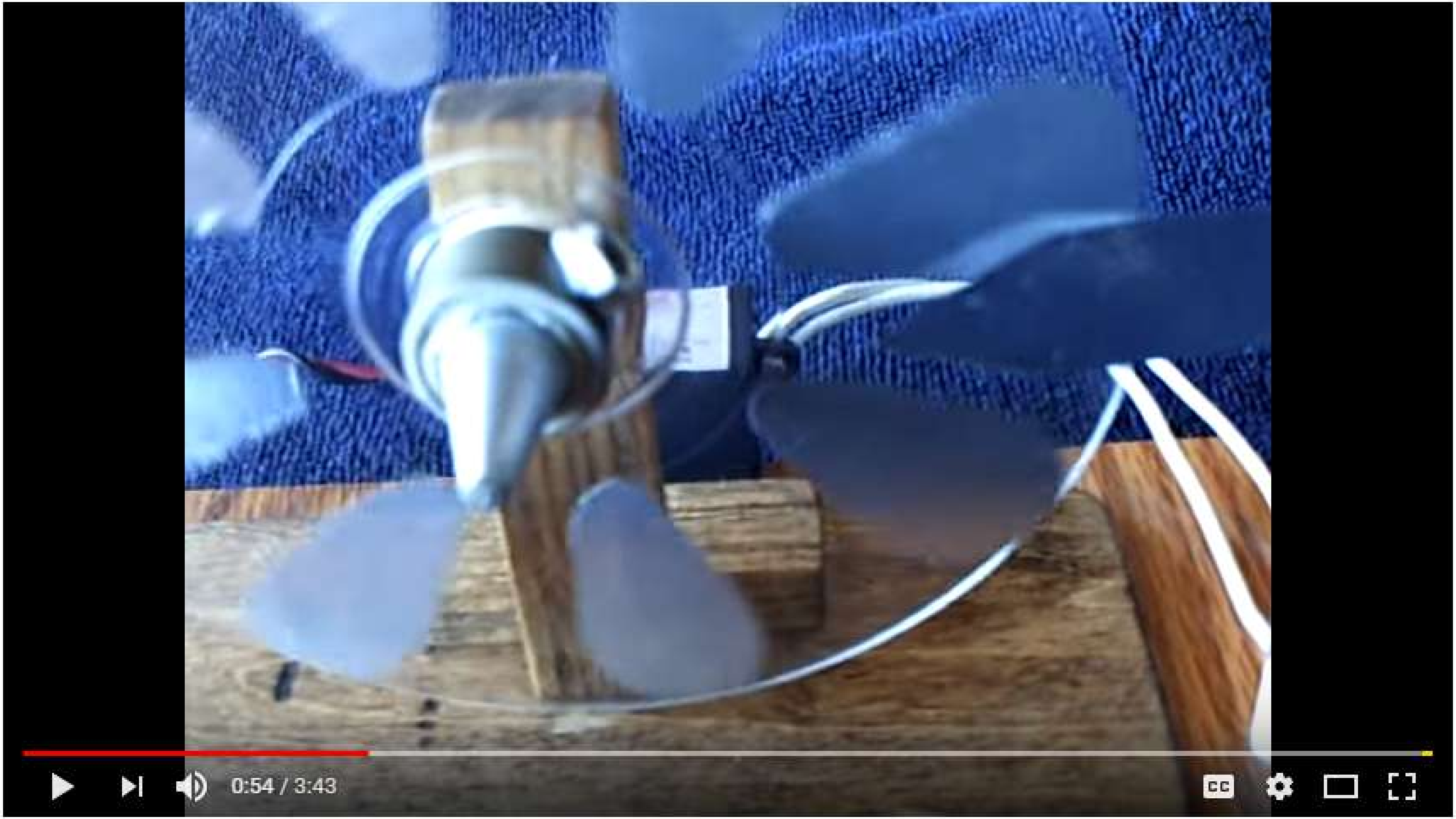
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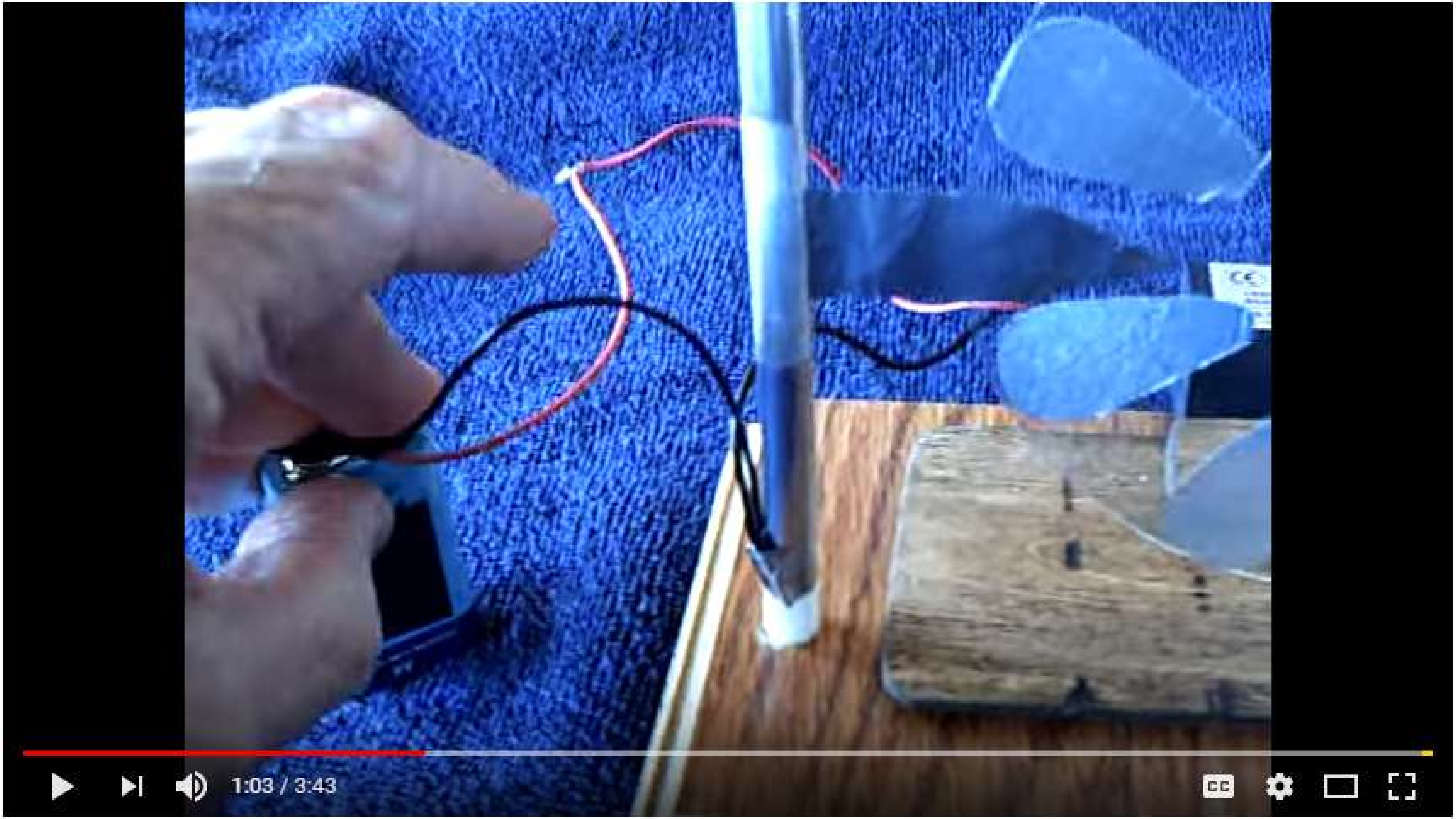
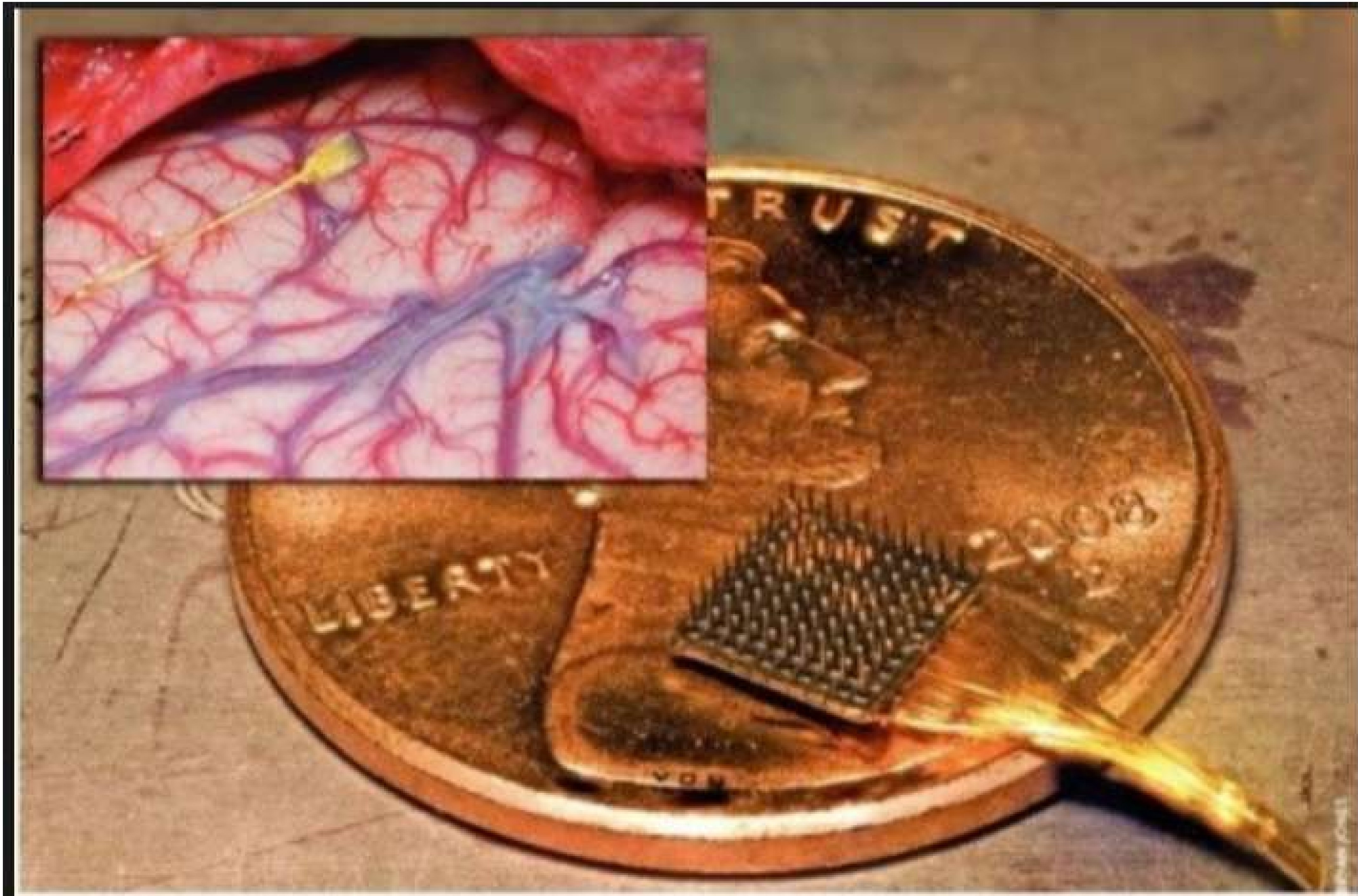
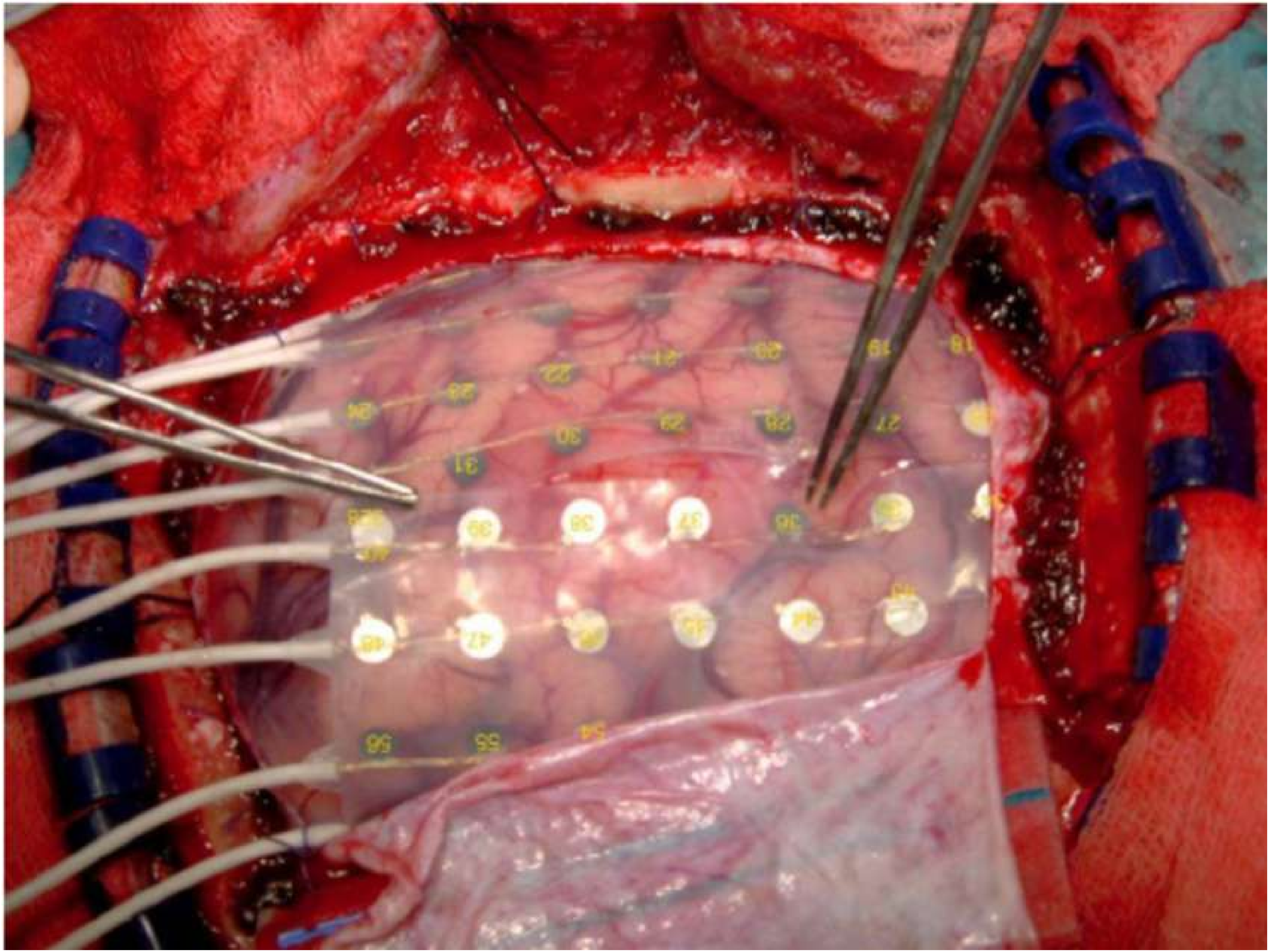
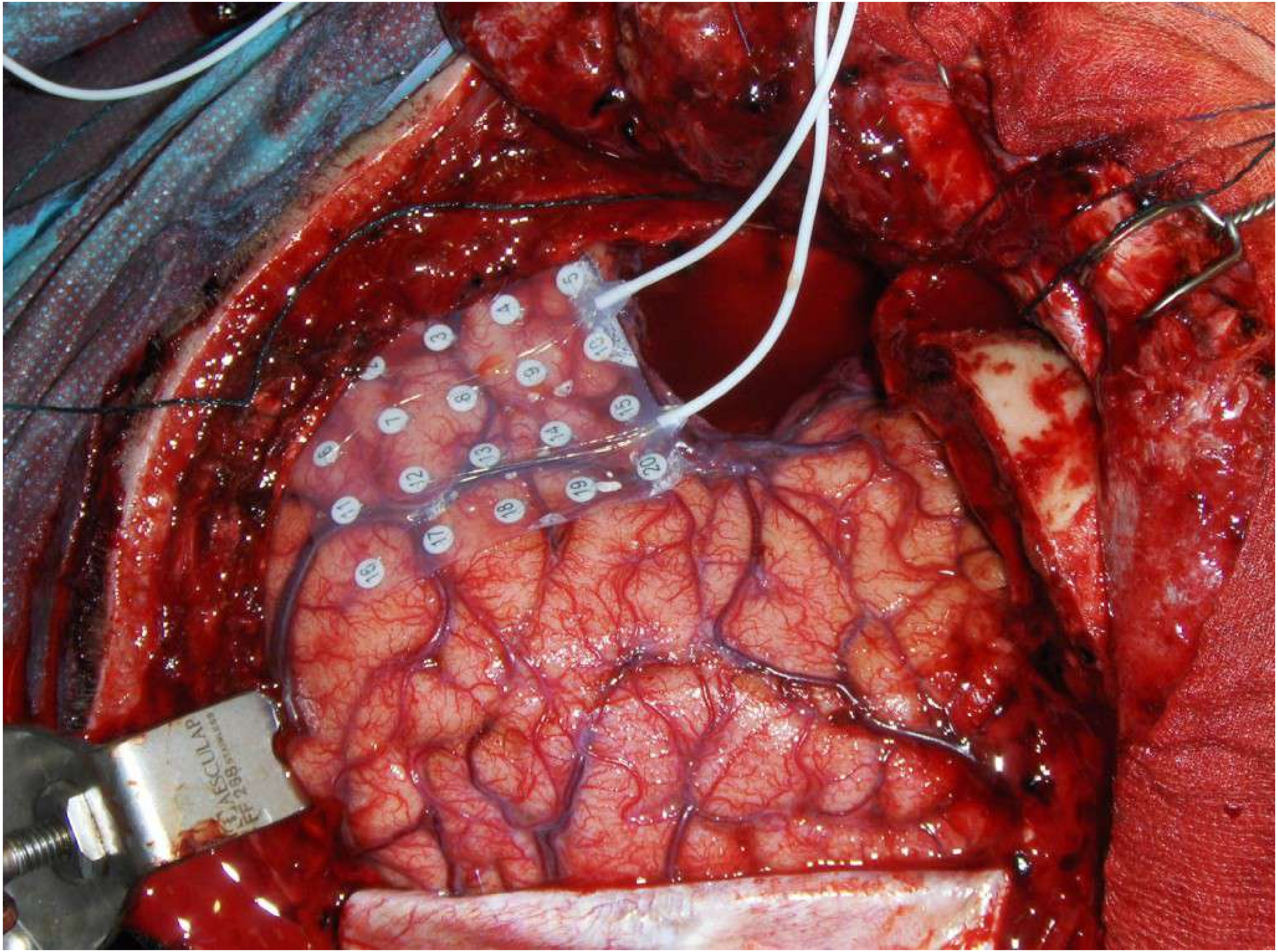

1:03 / 3:43
CC

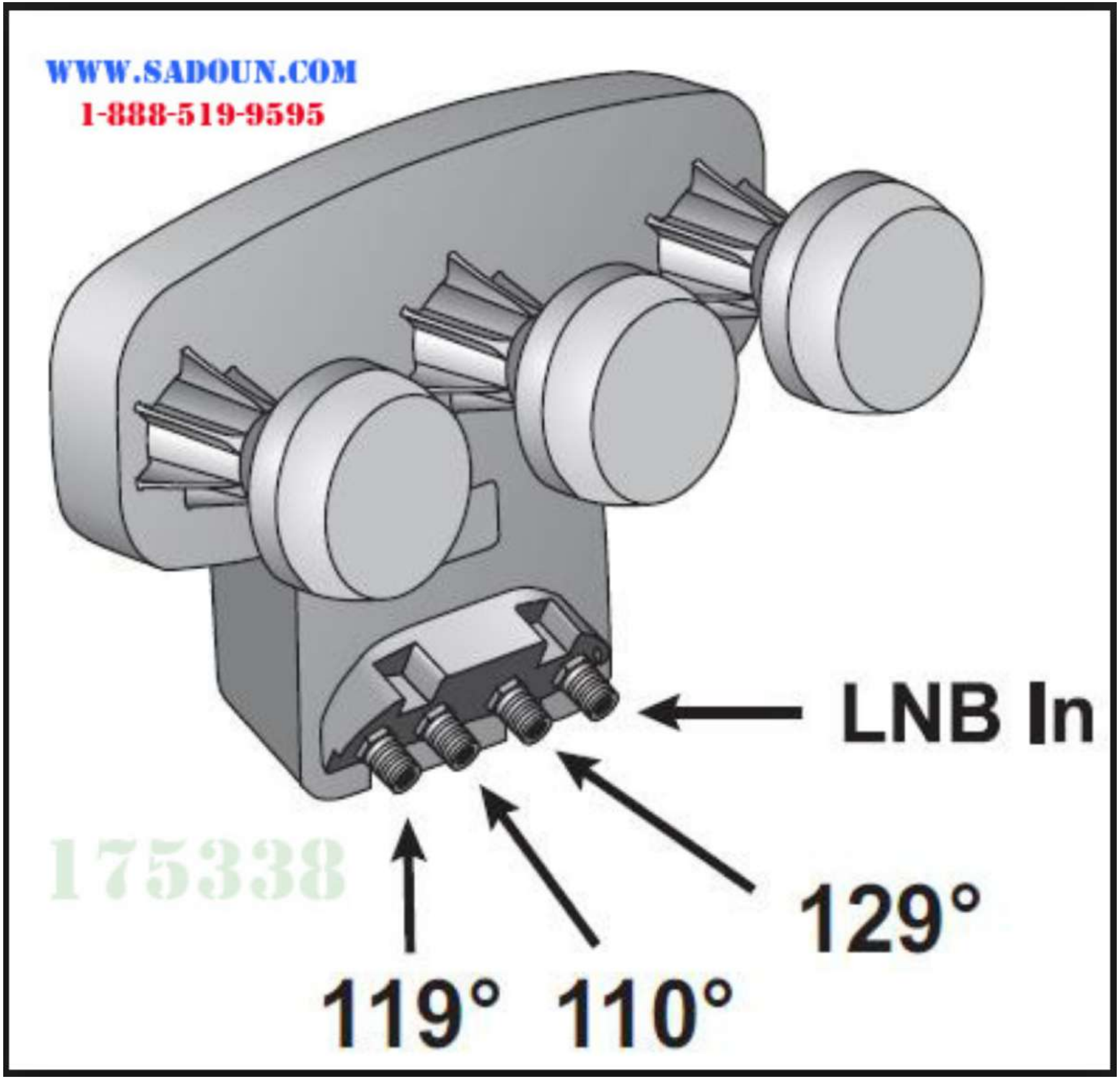

3:37 / 3:43



Thought control: The Utah Electrode Array can be implanted on a human brain. For a podcast and more photos, go to CityWeekly.net.




AESCULAP



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1:00 / 2:43
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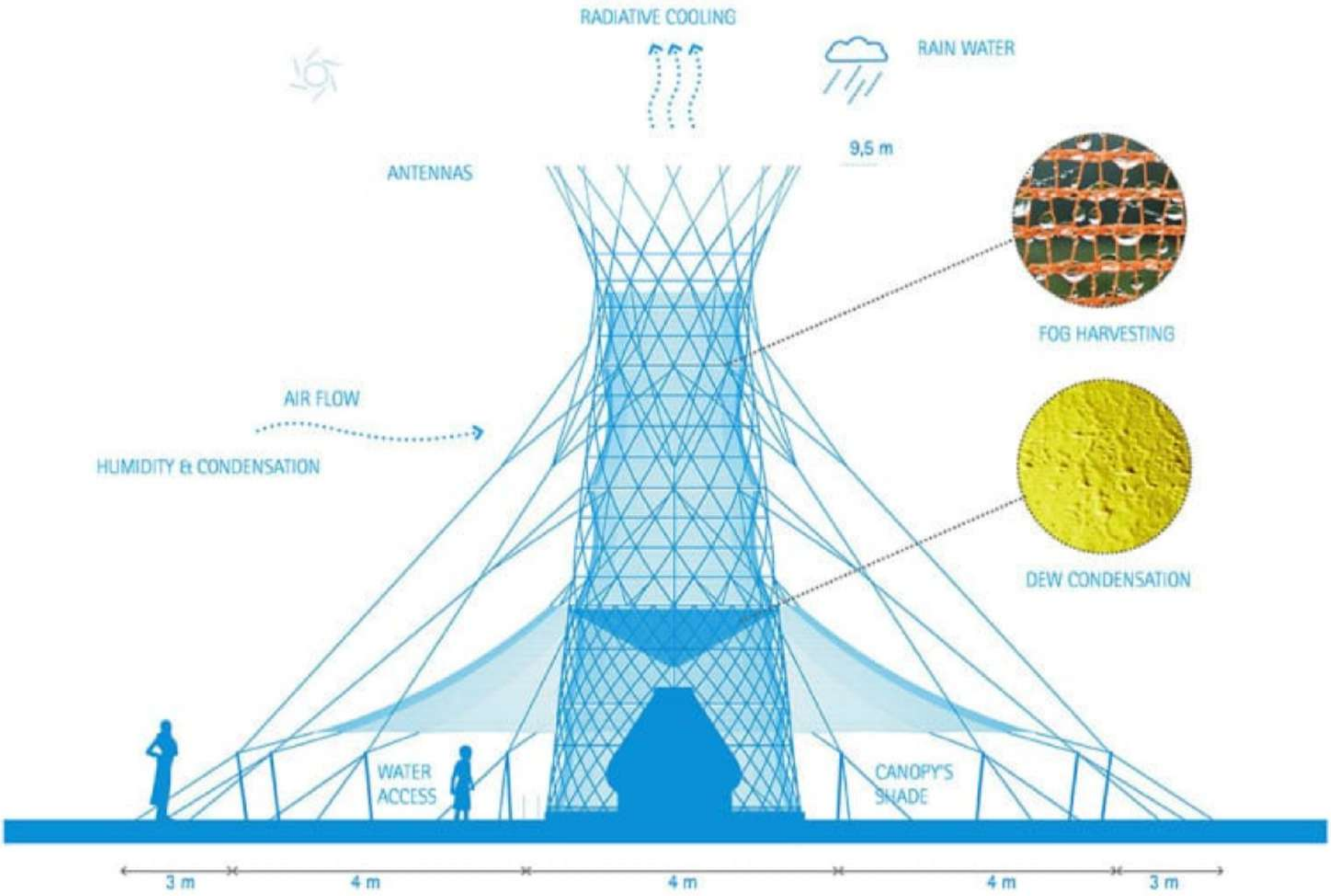

RADIATIVE COOLING
RAIN WATER
9,5 m
ANTENNAS
FOG HARVESTING
AIR FLOW
HUMIDITY & CONDENSATION
DEW CONDENSATION
WATER ACCESS
CANOPY'S SHADE
3 m
4 m
4 m
4 m
3 m

Warka Water


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Warka Water towers harvest drinkable water from the air


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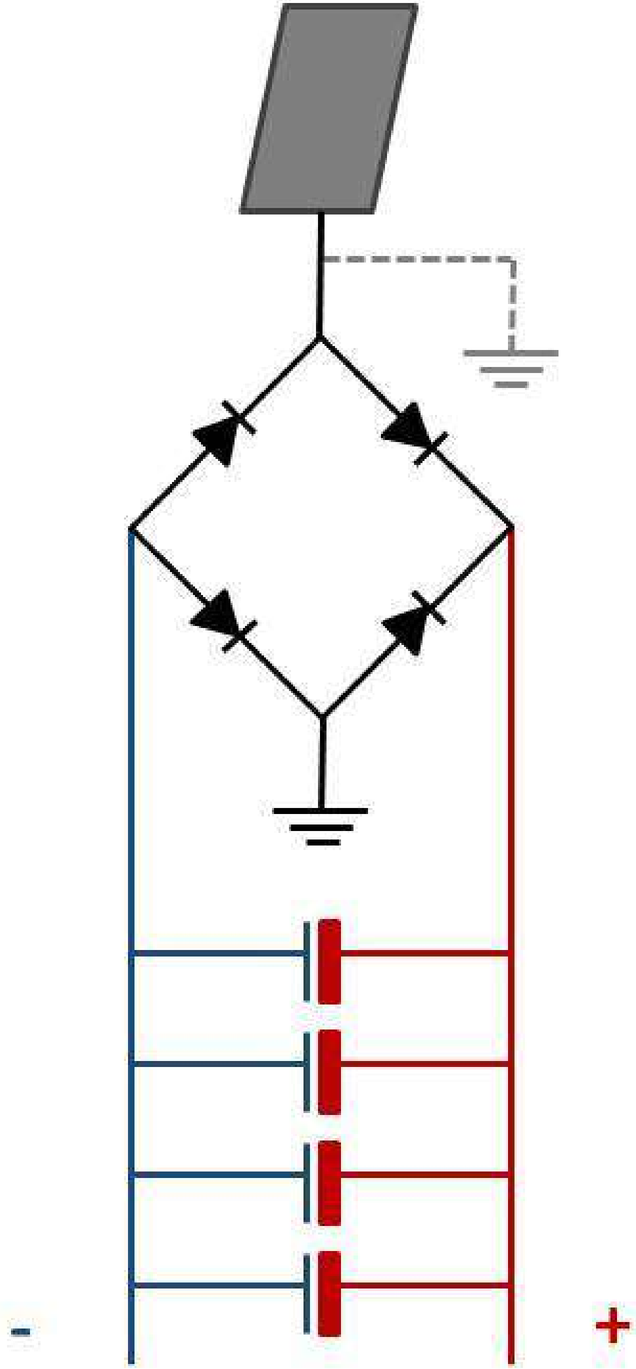


Insulated, polished aluminium plate high up in air

An extra direct earth connection might help

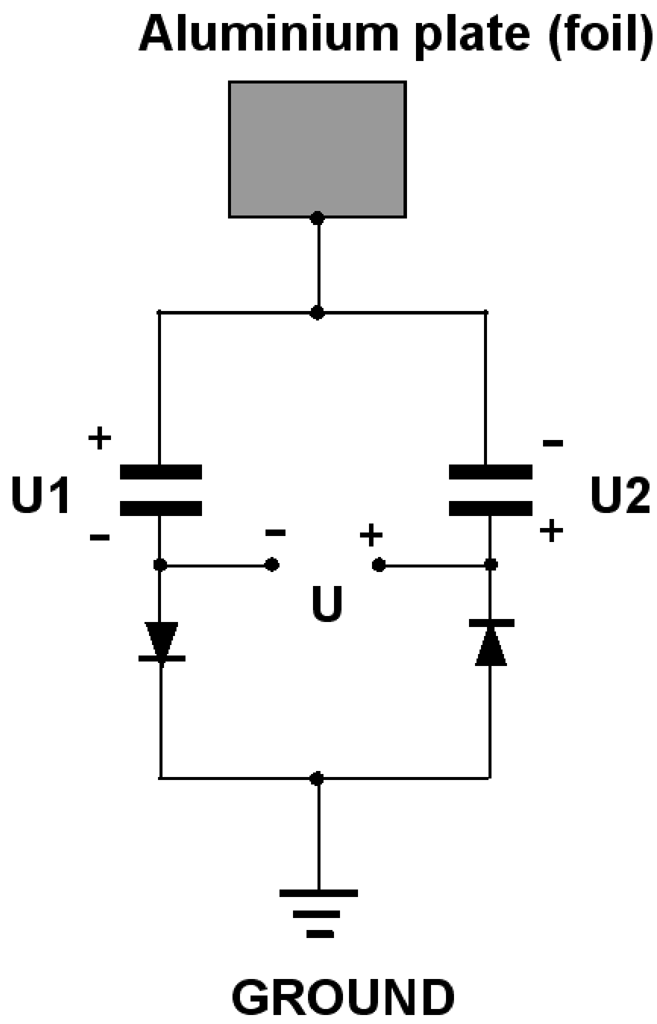
1N34a germanium diodes as full-wave bridge rectifier

4mm high load single core copper wire

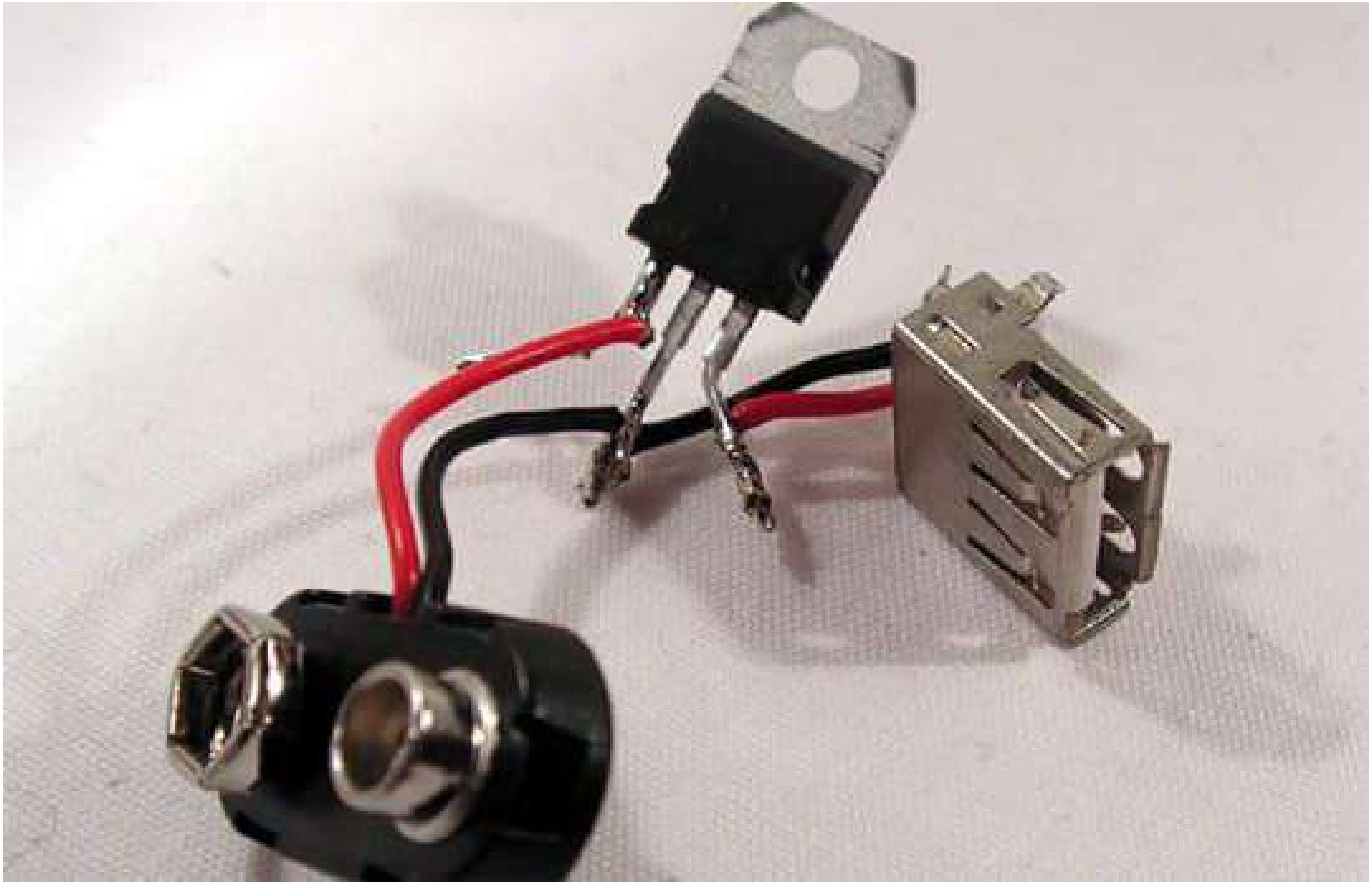
Earth is copper pipe 2 metres deep in moist soil

100uF 50V electrolytic capacitors in parallel

IMPROVEMENT OF RECEIVER:



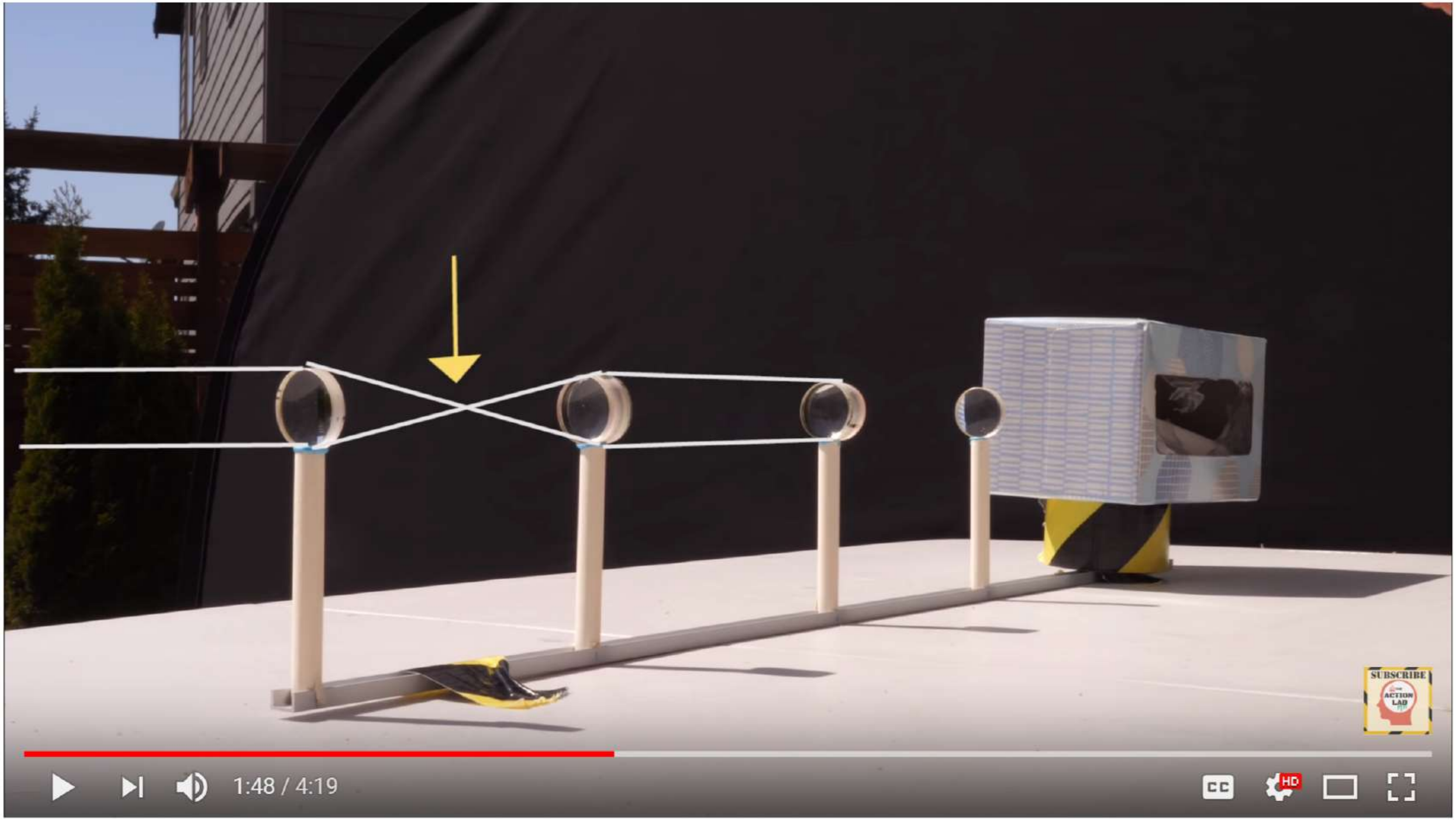
$$U = U1 + U2$$



Make Water Appear Frozen In Time Using Sound


24 Hz sound
makes water appear "frozen"
2:35 / 7:34
HD


f1=24.0 Hz
f2=23.0 Hz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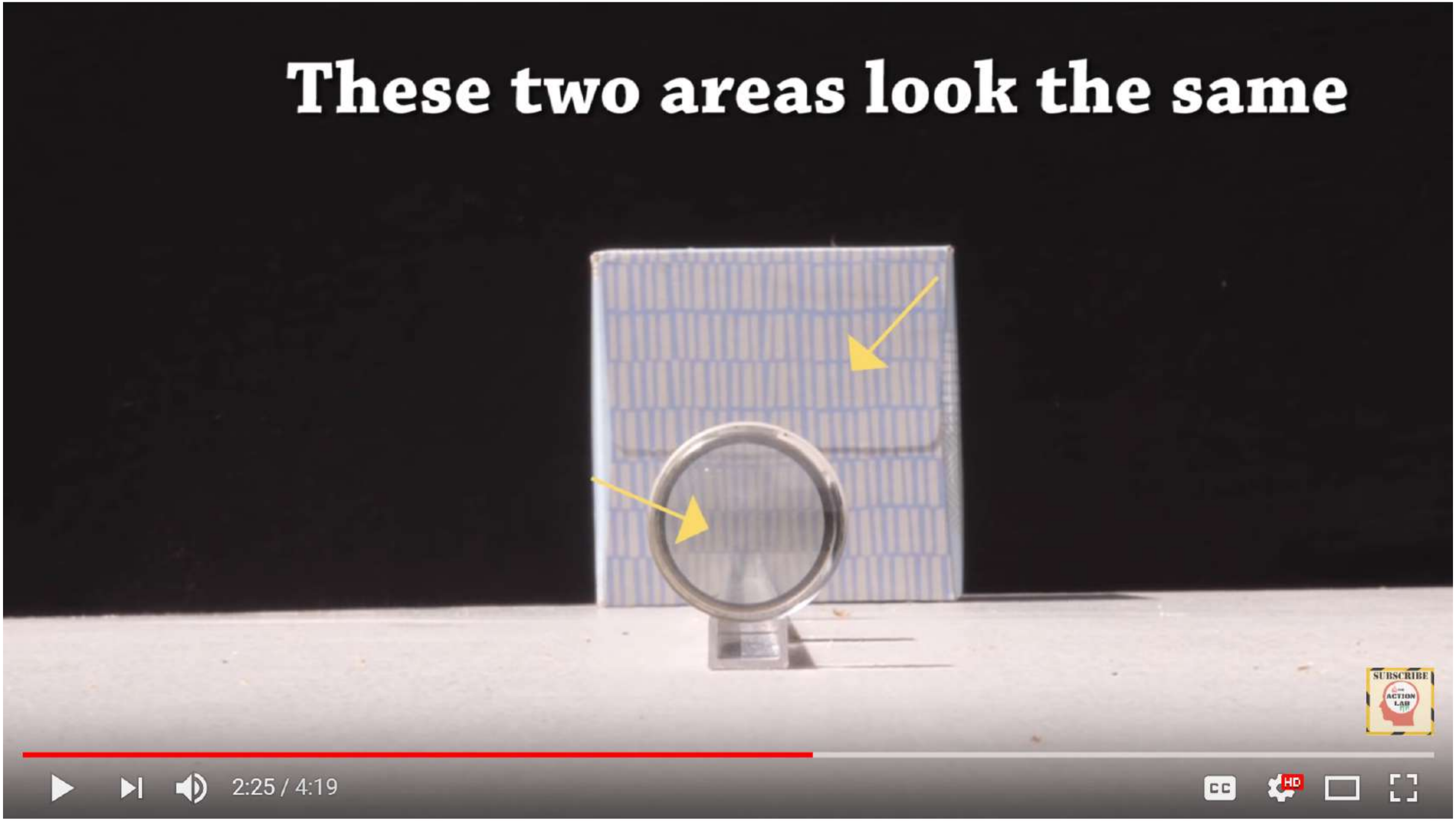
ACTION
LAB
1:48 / 4:19
HD


These two areas look the same
2:25 / 4:19
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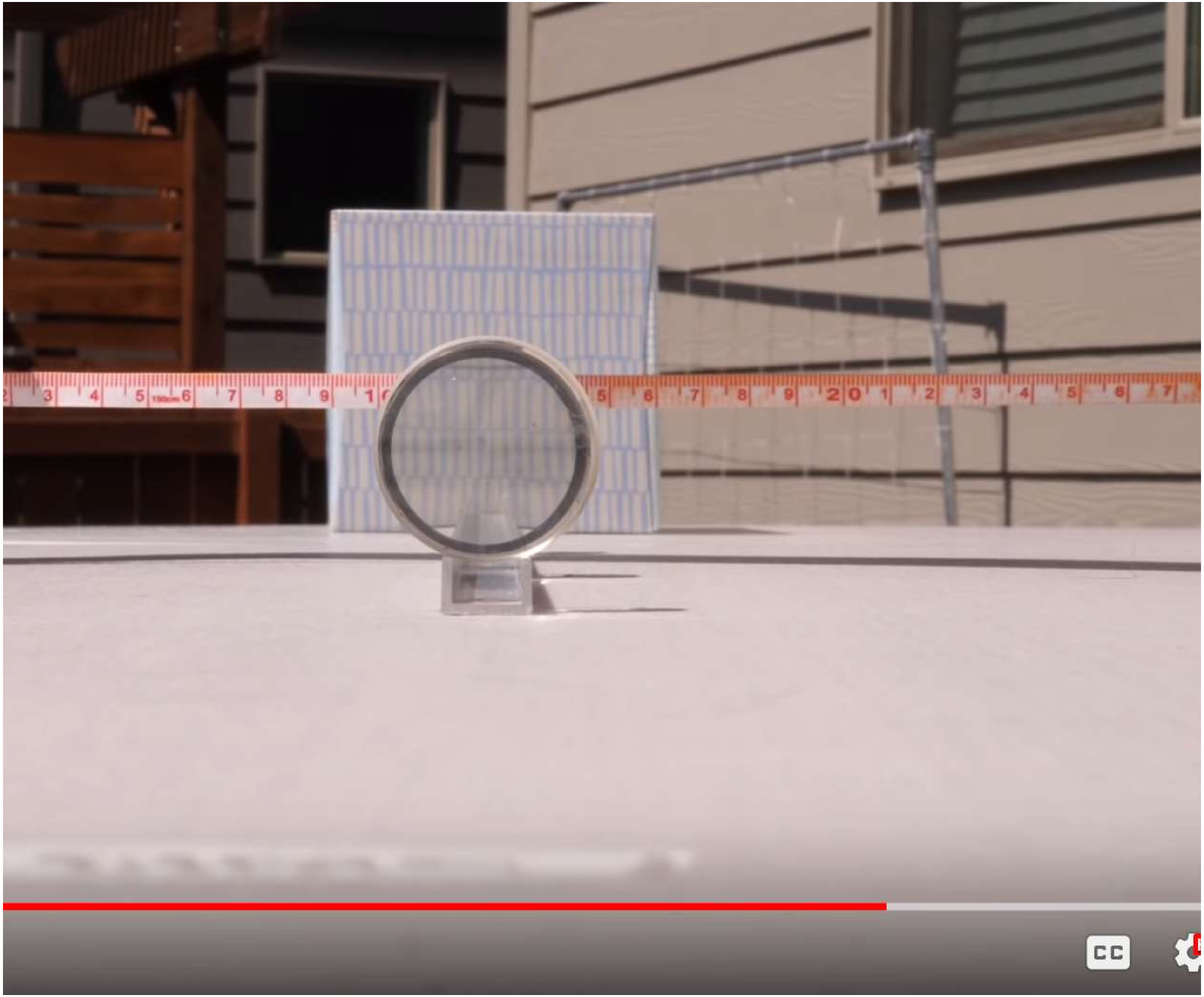
ACTION
LAB
CC
HD


CC